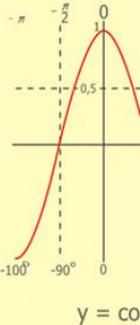
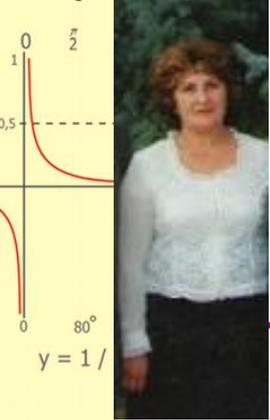
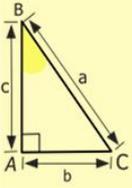
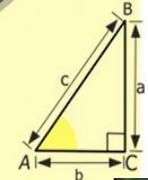
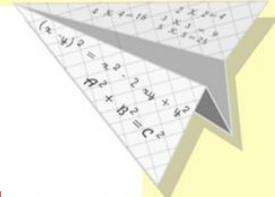
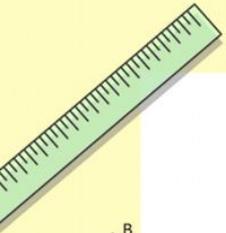


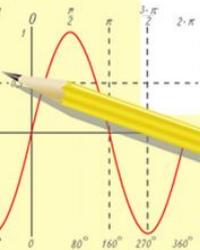
# Свойства степени с натуральным показателем

Учитель математики Муниципального бюджетного общеобразовательного учреждения Багаевской средней общеобразовательной школы № 1  
Алимова Надежда Ивановна



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 840 \\ \hline 105000 \end{array}$$

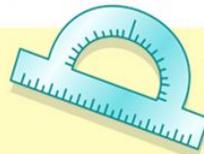
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

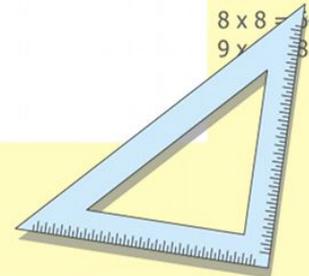
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



К этому уроку ученики знают понятие степени с натуральным показателем, основные свойства степени с натуральным показателем, умеют применять свойства при решении примеров, владеют навыками упрощения выражений



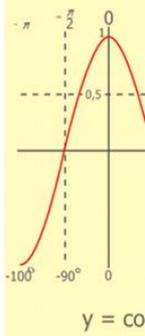
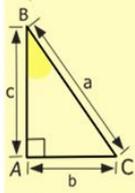
**Оборудование:** мультимедийная презентация, сигнальные карточки, перфокарты, учебник, тесты с выбором ответа, карта для самооценки, смайлики для рефлексии.

*Необходимое аппаратное и программное обеспечение*

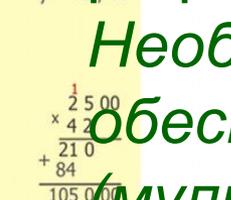
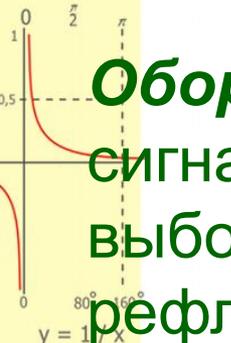
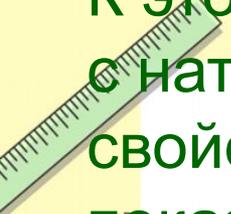
*(мультимедийный проектор, программные средства)*

*Программы MS PoverPoint, MS Word.*

*Компьютер и мультимедийный проектор*



- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
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- 7 x 7 = 49
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- 9 x 9 = 81



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

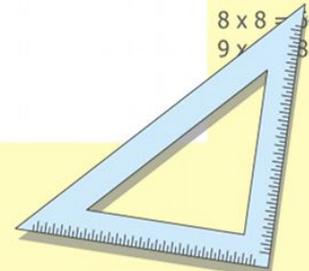
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

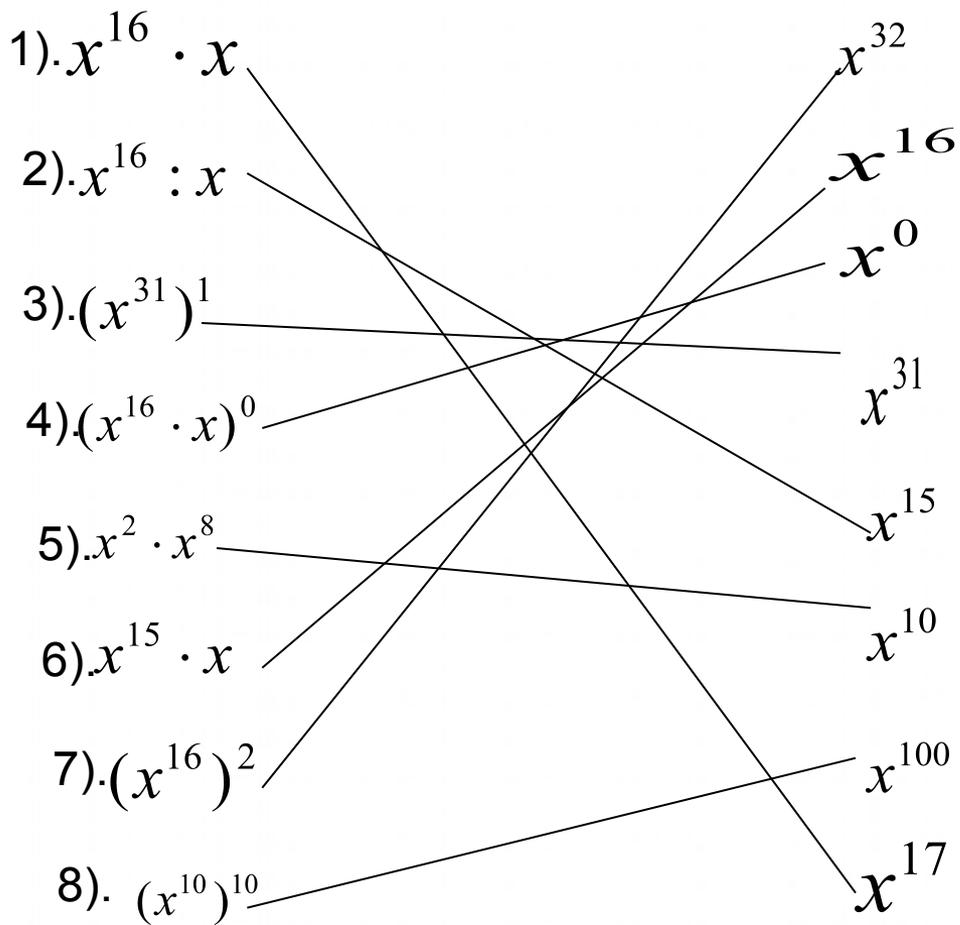


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$
$$\frac{x}{70}$$

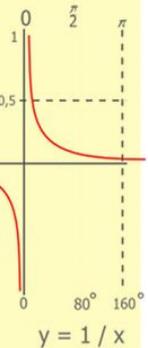
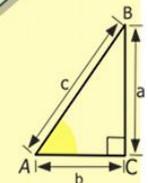
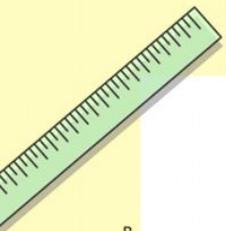
$$(x+y)(x-y) = x^2 - y^2$$



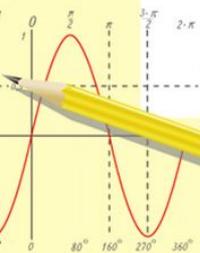
# лабиринт



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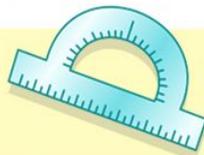
$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

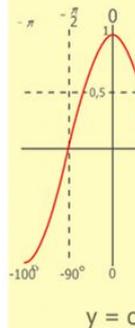
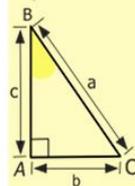
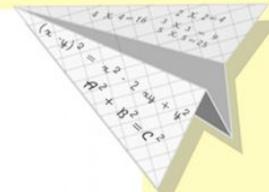


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

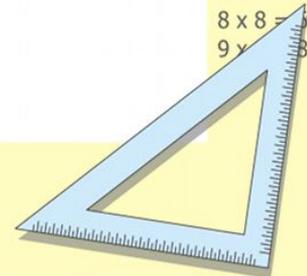
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

$$(x+y)(x-y) = x^2 - y^2$$

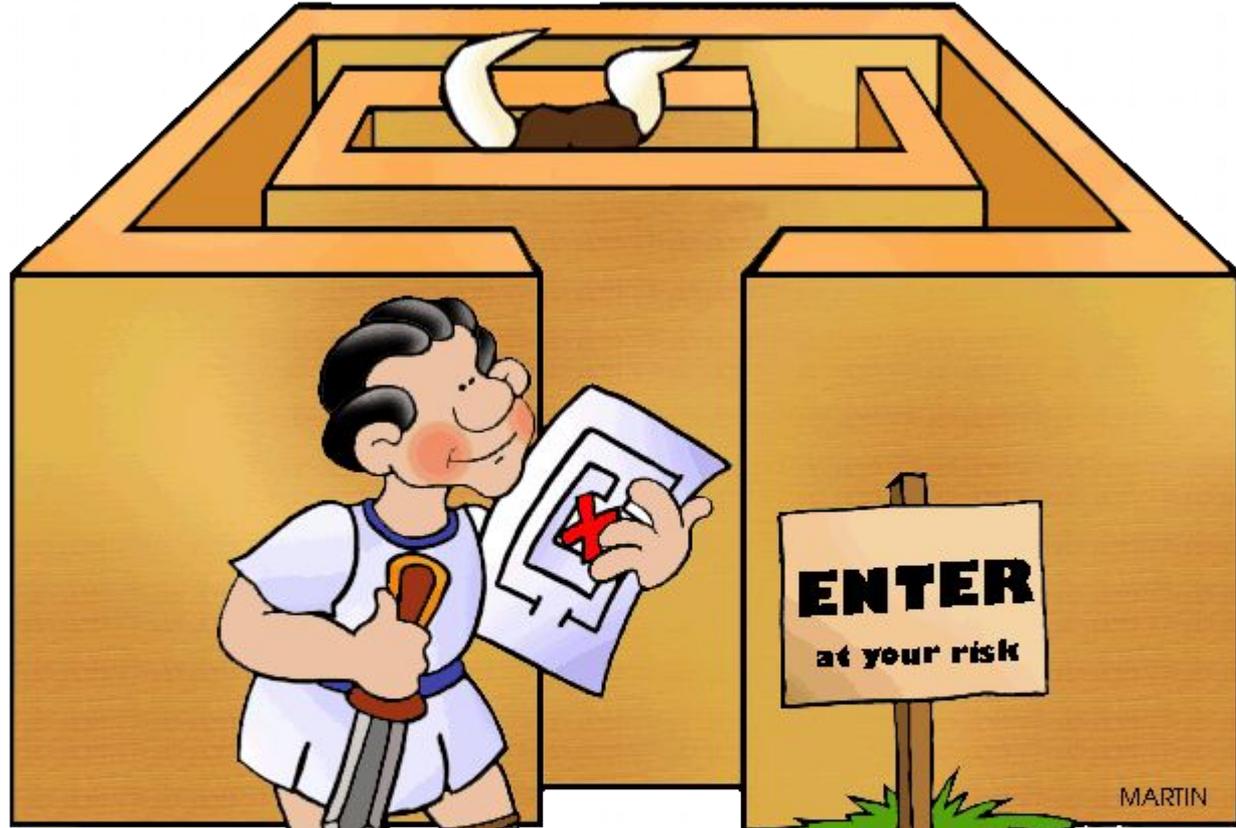


$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$

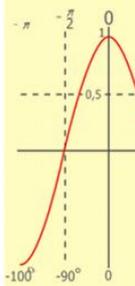
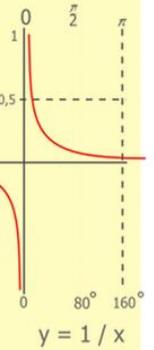
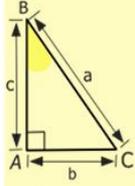
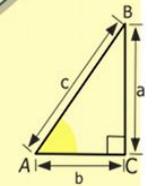
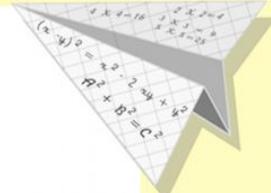
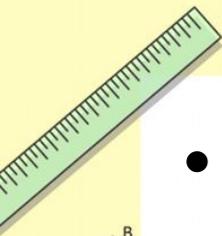


# Историческая справка

- С чем связана «путеводная нить»?

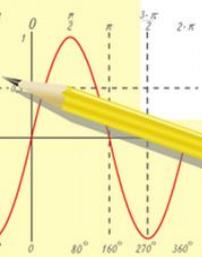


phillipmartin.com



$$\begin{array}{r} 1 \\ \times 2500 \\ \hline 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

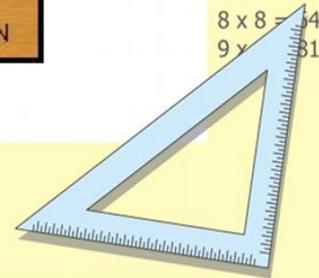
sin 90



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



# • Войдём в лабиринт



1. Что называется степенью числа  $a$  с натуральным показателем  $n$ ?

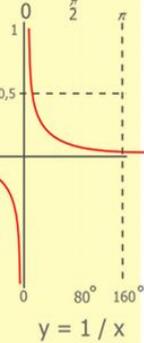
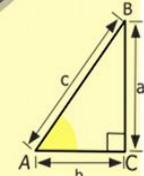
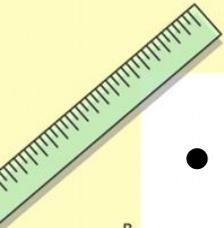
2. Как перемножить две степени с одинаковыми основаниями?

3. Как разделить две степени с одинаковыми основаниями?

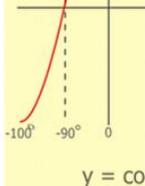
4. Как возвести степень в степень?

5. Как возвести произведение в степень?

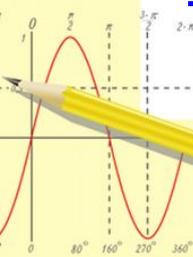
6. Как возвести дробь в степень?



$$\begin{array}{r} 1 \ 5 \ 00 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



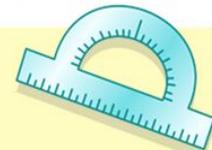
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$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

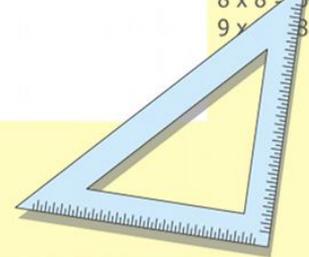
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

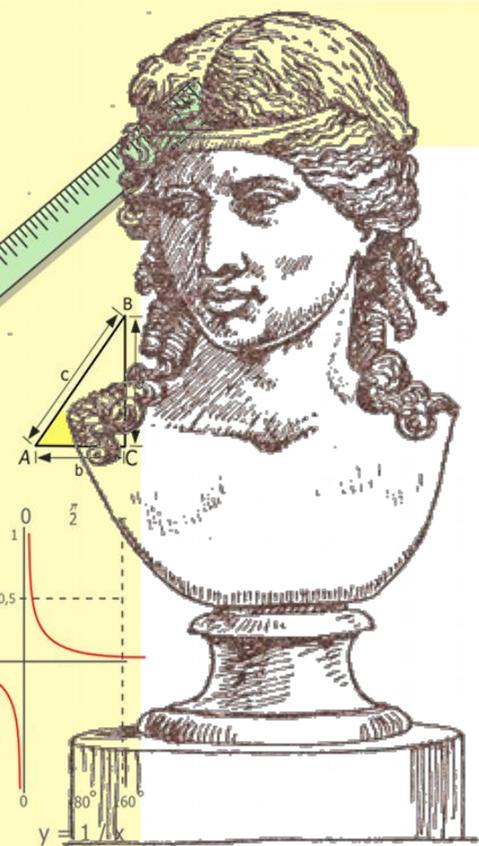
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$

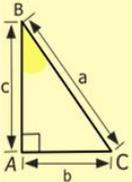
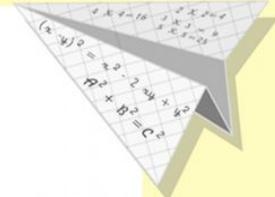




Степенью числа  $a$  с натуральным показателем  $n$  называется произведение  $n$  множителей, каждый из которых равен  $a$ .

$$a^n = \underbrace{a \cdot a \cdot \dots \cdot a}_n$$

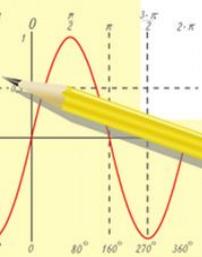
множителей



$y = \cos$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$

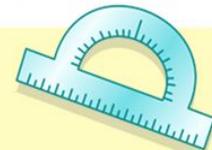
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

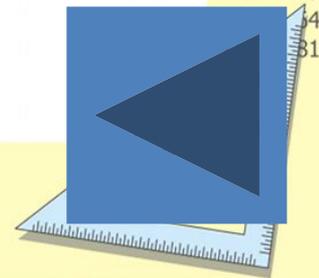
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$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

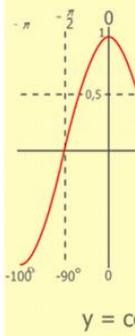
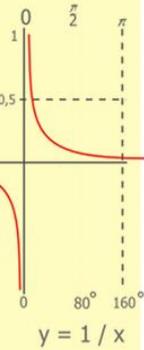
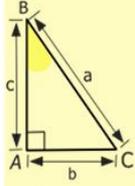
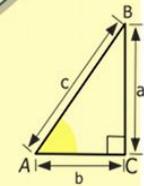
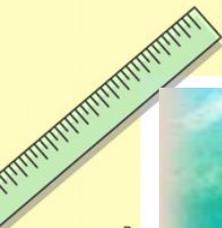
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$$(x+y)(x-y) = x^2 - y^2$$



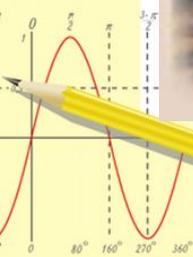
Чтобы перемножить две степени с одинаковыми основаниями нужно основание оставить прежним, а показатели сложить.

$$a^n \cdot a^m = a^{n+m}$$



$$\begin{array}{r} \frac{1}{2} 5\ 00 \\ \times 42 \\ \hline 21\ 0 \\ + 84 \\ \hline 105\ 0\ 00 \end{array}$$

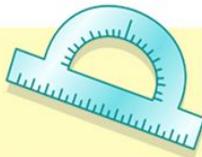
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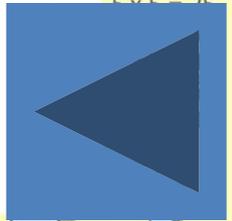
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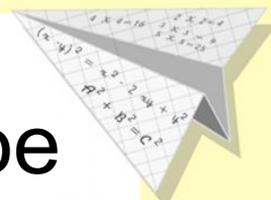
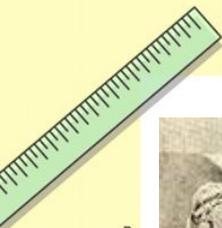


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

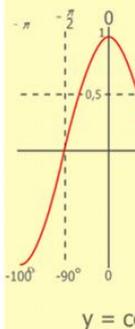
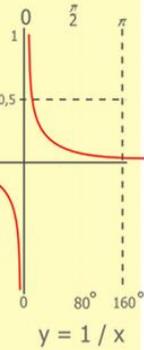
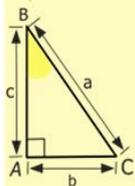
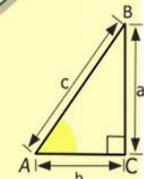
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$$(x+y)(x-y) = x^2 - y^2$$





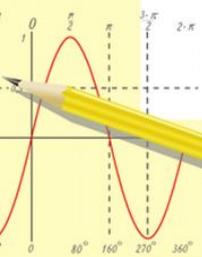
Чтобы найти частное двух степеней с одинаковыми основаниями нужно основание оставить прежним, а из показателя делимого вычесть показатель делителя.



$$a^n : a^m = a^{n-m}$$

$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

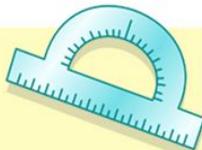
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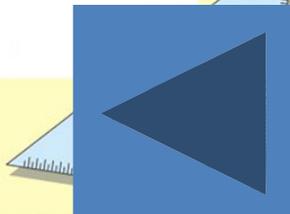
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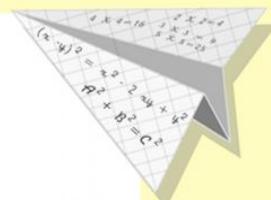
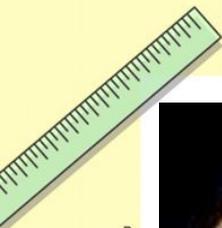


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

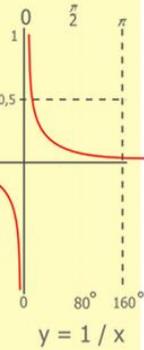
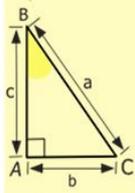
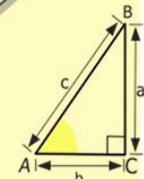
$$(x+y)(x-y) = x^2 - y^2$$





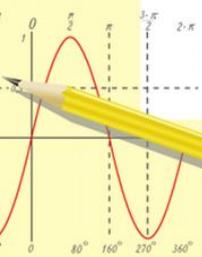
$$(a \cdot b)^m = a^m \cdot b^m.$$

Чтобы возвести степень в степень нужно основание оставить прежним, а показатели перемножить.



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

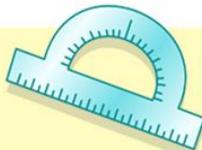
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

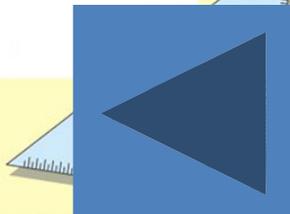
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

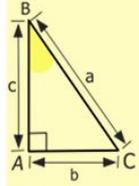
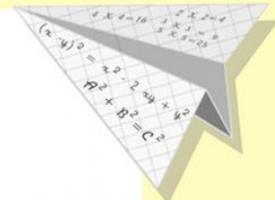
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



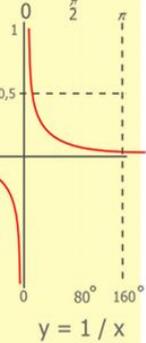


Чтобы возвести дробь в степень нужно в эту степень возвести числитель и знаменатель дроби



y = cos

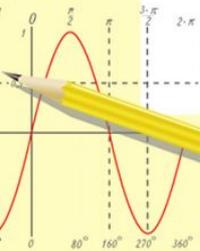
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49



y = 1 / x

$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

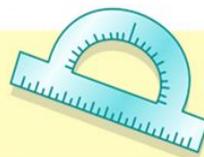
$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

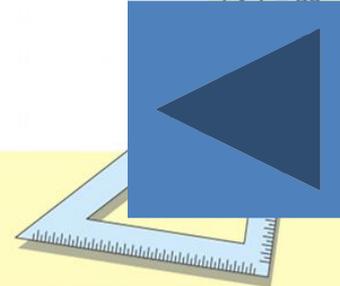
sin 90° = 1



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



б) Соедините «Нитью Ариадны» верные равенства

1)  $a^{12} b^{15}$

$(5a^3 b^5)^2$

2)  $a^2 b^6$

$(\frac{1}{2} a^4 b^3)^3$

3)  $25a^6 b^{10}$

$(a^4 b^5)^3$

4)  $\frac{1}{8} a^{12} b^9$

$(\frac{1}{4} a^2 b^3)^3$

5)  $\frac{1}{64} a^6 y^9$

$(a b^3)^2$

$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

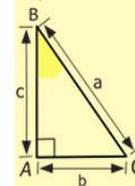
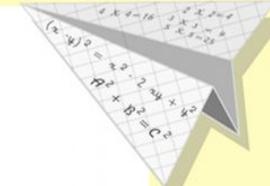
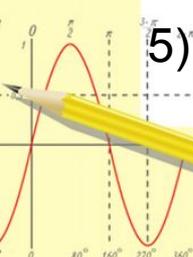
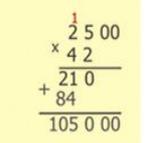
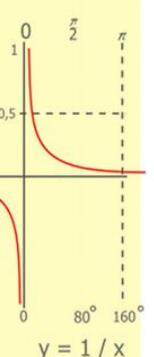
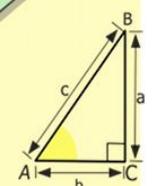
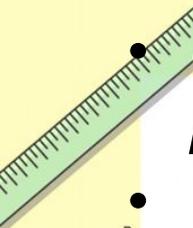
$\sin 90^\circ = 1$

$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$

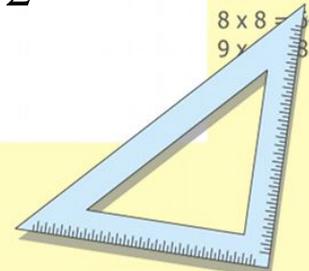
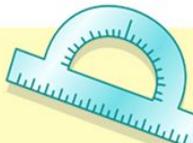
$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$

$(x+y)(x-y) = x^2 - y^2$

$x = 70$



2 x 2 = 4  
 3 x 3 = 9  
 4 x 4 = 16  
 5 x 5 = 25  
 6 x 6 = 36  
 7 x 7 = 49  
 8 x 8 = 64  
 9 x 9 = 81



$$1) (-5)^2 \cdot (-5)^3 < 0$$

+

$$2) (-7)^2 \cdot (-5)^3 \cdot 3^4 > 0$$

-

$$3) (-1)^2 \cdot (-1)^{14} \cdot 1^4 > 0 \cdot (-1)^6$$

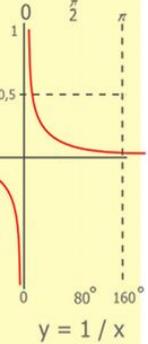
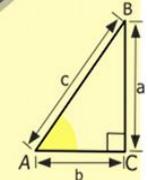
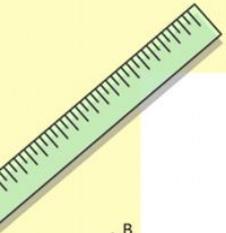
+

$$4) 3^n + 3^n + 3^n \neq 3^{3n}$$

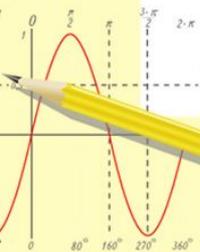
+

$$5) \frac{5^n + 5^n + 5^n}{5^n} = 3$$

+



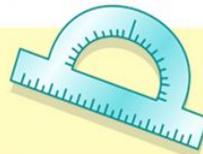
$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

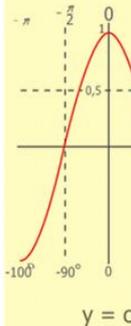
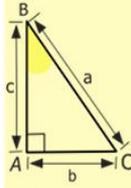
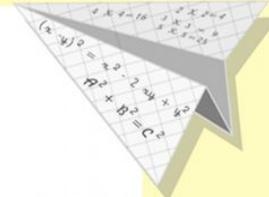
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

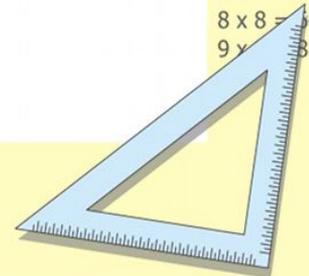
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

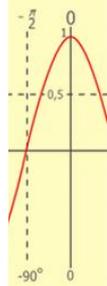
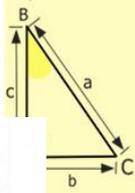
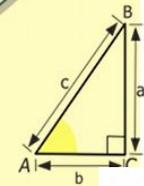
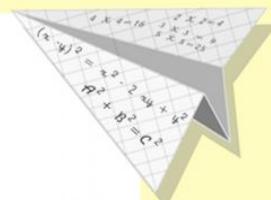
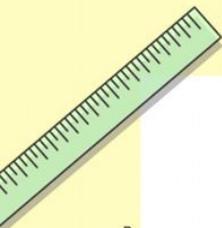
$$(x+y)(x-y) = x^2 - y^2$$



$$y = \cos$$

$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$





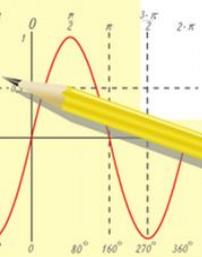
Пример	1	2	3	4	5
$(x^9)^3$	$x^6$	$x^{12}$	$x^{27}$	$x^3$	$x^{93}$
$\frac{7^5 \cdot 7^3}{7^7}$	$7^8$	$7^{15}$	$\frac{1}{7}$	7	49
$2^5 \cdot 1^5$	$3^5$	32	$3^{10}$	$2^{10}$	50
$x^m : x^n$	$x^{mn}$	$x^{m:n}$	$x^{m+n}$	$x^{m-n}$	$x^{n-m}$
$\frac{a^{2n}}{a}$	$a^n$	$a^{2n+1}$	$a^{n-1}$	$a^{2n-1}$	$1^{2n}$

$y = 1$

$\frac{1}{2} 5$   
 $\times 42$   
 $\hline 210$   
 $+ 84$   
 $\hline 1050$

$y = \cos$

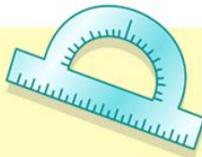
2 = 4  
 3 = 9  
 4 = 16  
 5 x 5 = 25  
 6 x 6 = 36  
 7 x 7 = 49  
 8 x 8 = 64  
 9 x 9 = 81



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

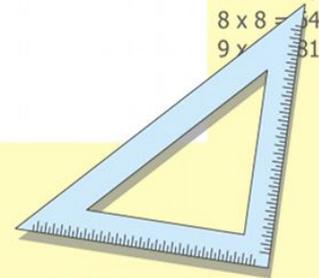
$\sin 90^\circ = 1$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

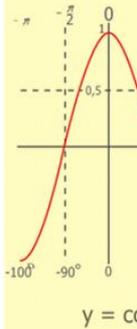
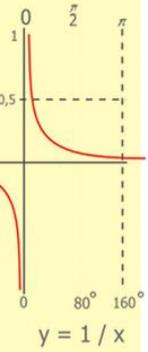
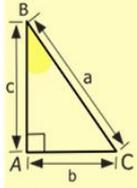
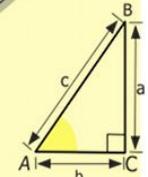
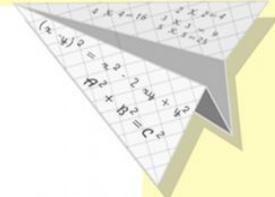
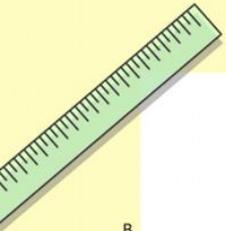
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



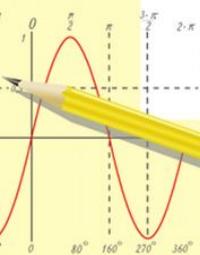
# Проверь себя!

Пример	1	2	3	4	5
$(x^9)^3$	$x^6$	$x^{12}$	$x^{27} +$	$x^3$	$x^{93}$
$\frac{7^5 \cdot 7^3}{7^7}$	$7^8$	$7^{15}$	$\frac{1}{7}$	$7 +$	49
$2^5 \cdot 1^5$	$3^5$	$32 +$	$3^{10}$	$2^{10}$	50
$x^m : x^n$	$x^{mn}$	$x^{m:n}$	$x^{m+n}$	$x^{m-n} +$	$x^{n-m}$
$\frac{a^{2n}}{a}$	$a^n$	$a^{2n+1}$	$a^{n-1}$	$a^{2n-1} +$	$1^{2n}$



$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

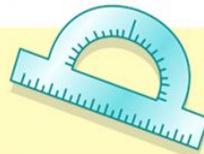
- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$
- $9 \times 9 = 81$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

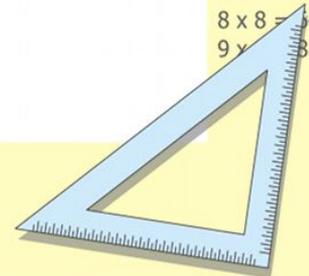
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

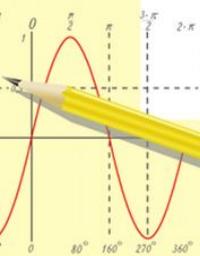
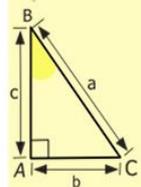
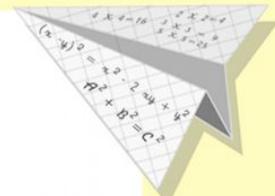
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$





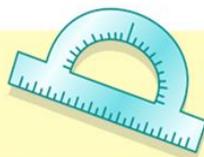
# Минотавр повержен!



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

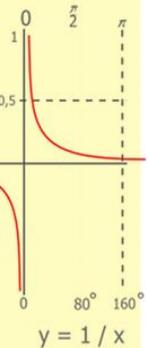
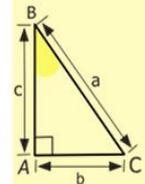
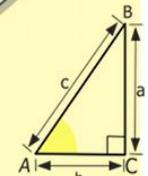
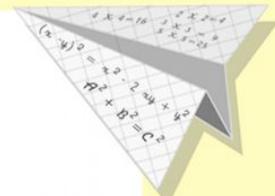
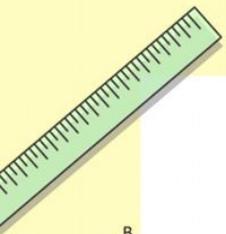
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin x \\ x = 25y \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 \end{cases}$$

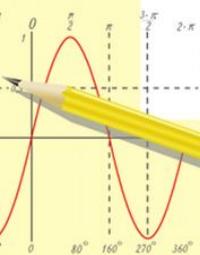
$$x = 70$$



Пройдём ещё один круг «лабиринта», а  
впереди финишная прямая

$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

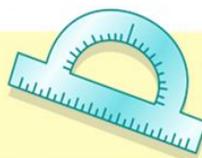
- 2 x 2 = 4
- 3 x 3 = 9
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

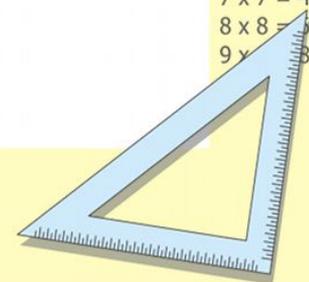
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



# Работа по группам

1 группа

1) Вычислить 
$$\frac{(3^3 \cdot 3)^5 \cdot 3^4}{(3^7)^3}$$

При каком значении  $k$  выполняется равенство

2)

$$\left(\frac{5^k}{5^2}\right)^2 = 5^8.$$

2 группа

1) Вычислить 
$$\frac{(7^5 \cdot 7)^5 \cdot 7^7}{(7^7)^5}$$

2) При каком значении  $k$  выполняется равенство

$$\left(\frac{4^k}{4^3}\right)^2 = 4^6.$$

$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

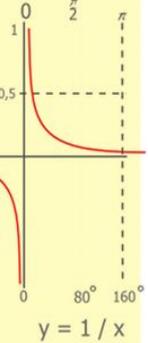
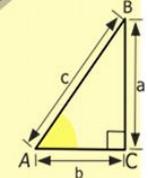
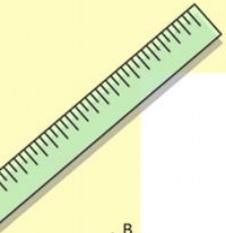
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

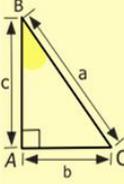
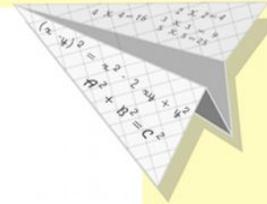
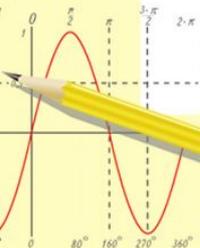
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

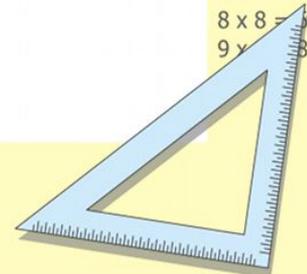
$$(x+y)(x-y) = x^2 - y^2$$



$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



1 группа.

1) Решение:  $\frac{(3^3 \cdot 3)^5 \cdot 3^4}{(3^7)^3} = 3^3 = 27.$

Ответ: 27.

2)  $\left(\frac{5^k}{5^2}\right)^2 = \frac{5^{2k}}{5^4} = 5^{2k-4};$

$5^{2k-4} = 5^8;$

$2k - 4 = 8;$

$2k = 8 + 4;$

$2k = 12;$

$k = 6.$

Ответ: при  $k=6$  выполняется равенство

$\left(\frac{5^k}{5^2}\right)^2 = 5^8.$

$\frac{a}{A} = \frac{b}{B} = \frac{c}{C} = \frac{a+b}{\sin C}$

$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

$\sin 90^\circ = 1$

2 группа.

1) Решение:

$\frac{(7^5 \cdot 7)^5 \cdot 7^7}{(7^7)^5} = \frac{(7^6)^5 \cdot 7^7}{7^{35}} = \frac{7^{37}}{7^{35}} = 7^2 = 49$

Ответ: 49.

2)

$\left(\frac{4^k}{4^3}\right)^2 = \frac{4^{2k}}{4^6} = 4^{2k-6};$

$4^{2k-6} = 4^6;$

$2k - 6 = 6;$

$2k = 6 + 6;$

$2k = 12;$

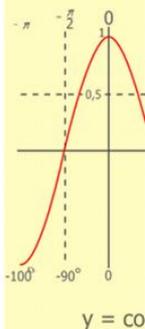
$k = 6.$

Ответ: при  $k=6$  выполняется равенство

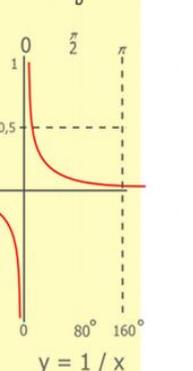
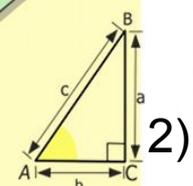
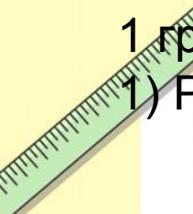
$\left(\frac{4^k}{4^3}\right)^2 = 4^6.$

$y = \sin 90$   
 $y = 1$   
 $x = 25 + 45$   
 $x = 70$

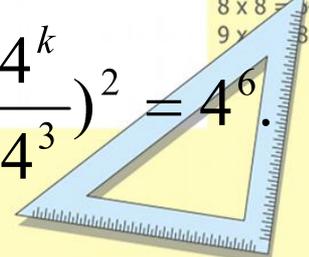
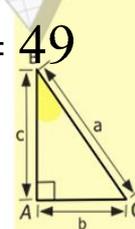
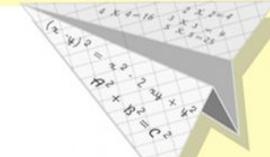
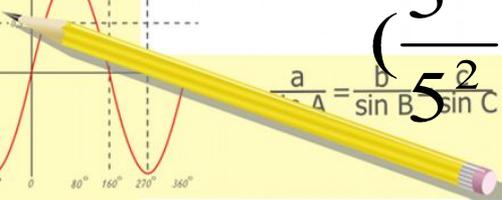
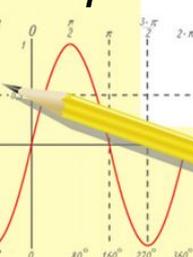
$(x+y)(x-y) = x^2 - y^2$

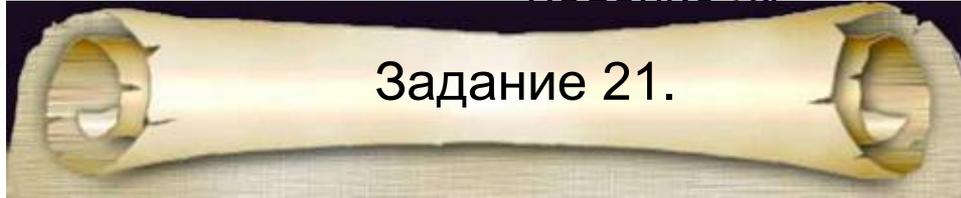


- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



$\frac{1}{2} \begin{matrix} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{matrix}$





Сократить дробь:

$$\frac{33^3}{3^2 \cdot 11^2}$$

Решение:

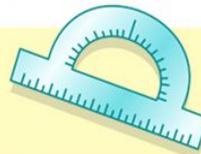
$$\frac{33^3}{3^2 \cdot 11^2} = \frac{33^3}{(3 \cdot 11)^2} = \frac{33^3}{33^2} = 33^{3-2} = 33^1 = 33.$$

Ответ: 33.

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

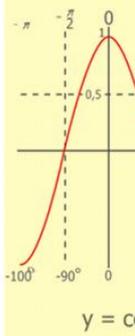
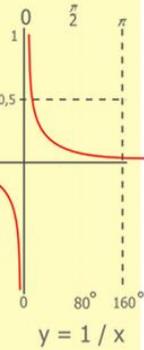
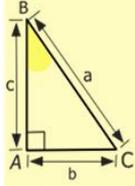
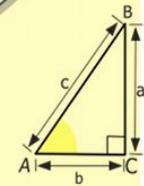
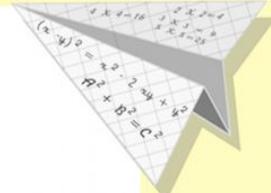
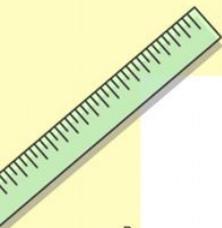
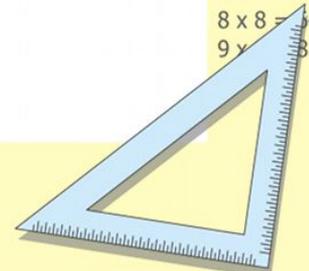


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

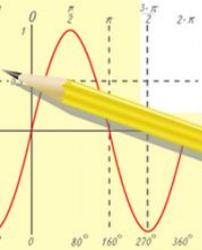
$$x = 70$$

$$(x+y)(x-y) = x^2 - y^2$$



$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 10500 \end{array}$$

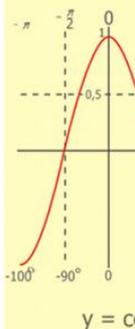
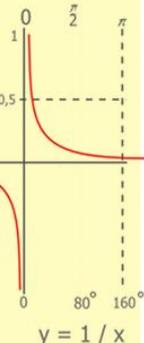
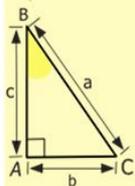
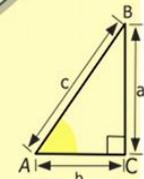
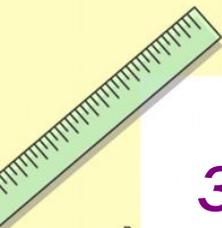
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



Мы выполнили большую и важную задачу. А вот какую, вы мне скажите сами.

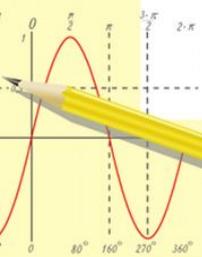
Ответы учеников:

- \*Вспомнили и закрепили все свойства,
- \*Применяли данные свойства для решения заданий,
- \*Отрабатывали решения,
- \*Работали в группах, консультируя друг друга,
- \*Рассмотрели решение задания из II части ГИА -2014 по математике.



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

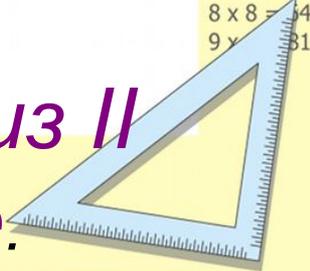
$$\frac{a+b}{c} = \frac{a+b}{c}$$

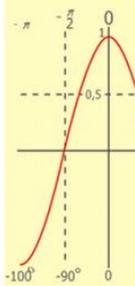
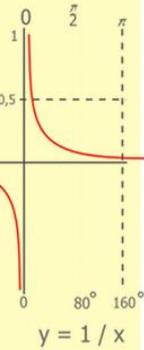
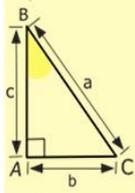
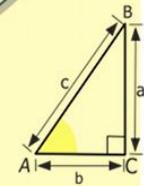
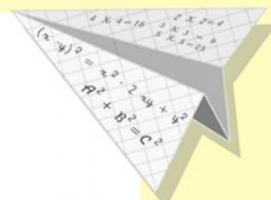
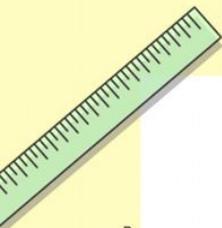
$$\sin 90^\circ = 1$$

$$\begin{cases} y = \sin 90^\circ \\ x = 25y + 4 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25y + 4 \end{cases}$$

$$(x+y)(x-y)$$



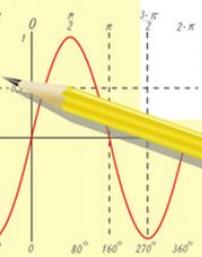


$y = 1/x$

$y = \cos$

$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

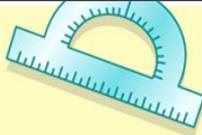
- $2 \times 2 = 4$
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

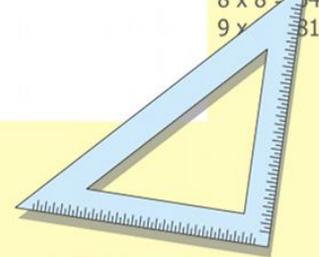
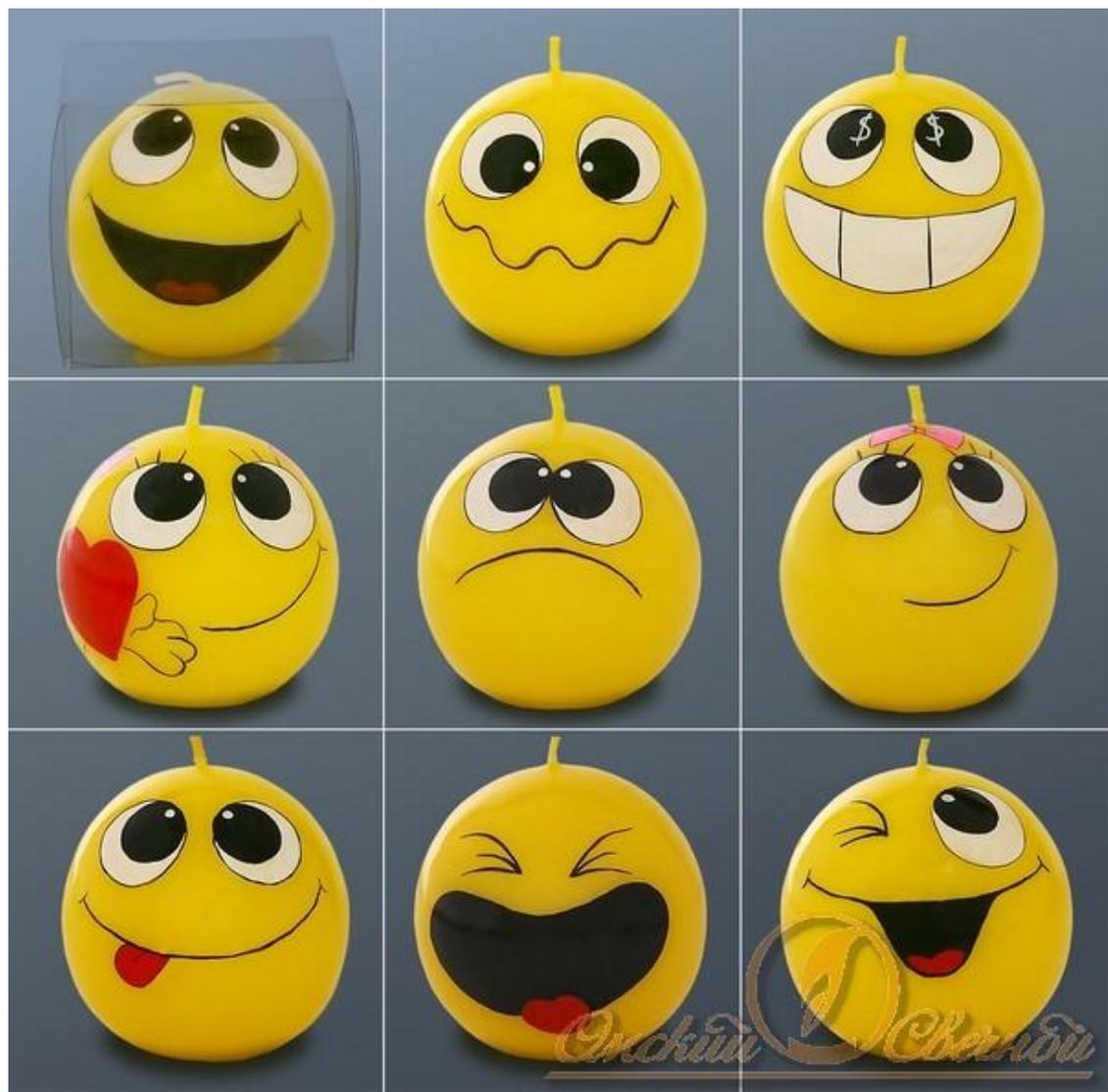
$\sin 90^\circ = 1$



$x = 25y + 45$

$$\begin{array}{l} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{array}$$

$$(x+y)(x-y) = x^2 - y^2$$



# Домашнее задание

## ТЕСТ 7. ОПРЕДЕЛЕНИЕ СТЕПЕНИ С НАТУРАЛЬНЫМ ПОКАЗАТЕЛЕМ

### Вариант 1

#### Часть 1

A1. Как называется выражение  $(-7)^4$  ?

- 1) основание степени
- 2) показатель степени
- 3) степень

A2. Запишите произведение  $(-3) \cdot (-3) \cdot (-3) \cdot (-3)$  в виде степени.

- 1)  $-3^4$
- 2)  $(-3)^4$
- 3)  $-4^3$
- 4)  $4^{-3}$

A3. Найдите значение выражения  $\left(\frac{3}{5}\right)^4$ .

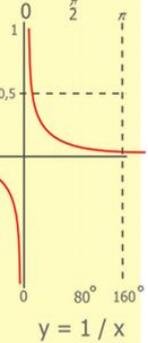
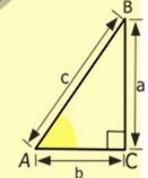
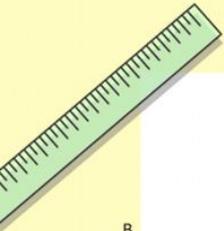
- 1)  $\frac{12}{20}$
- 2)  $\frac{12}{5}$
- 3)  $\frac{81}{5}$
- 4)  $\frac{81}{625}$

A4. Найдите значение выражения  $-2,5 \cdot (-10)^3$ .

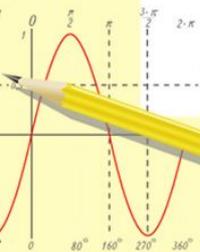
- 1) -2500
- 2) 2500
- 3) 25000
- 4) -25000

A5. Представьте в виде степени с основанием 4 число 16.

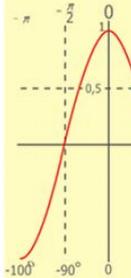
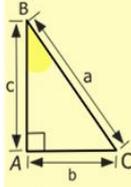
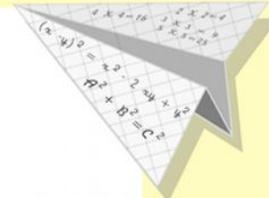
- 1)  $4^{16}$
- 2)  $4^8$
- 3)  $4^2$
- 4)  $4^4$



$$\begin{array}{r} 1 \\ \times 2500 \\ \hline 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

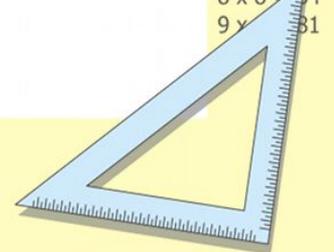


$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$



$y = \cos$

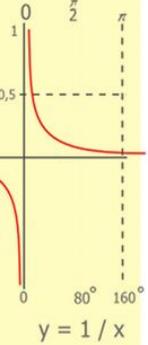
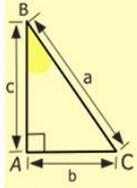
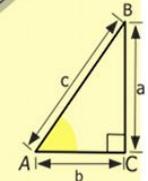
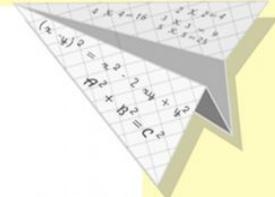
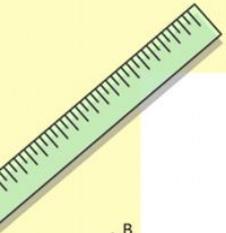
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- $8 \times 8 = 64$
- $9 \times 9 = 81$



$$x^2 - 4^2$$

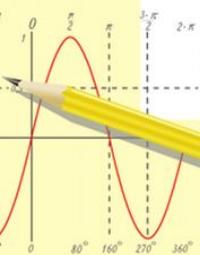
$$\frac{c^2 - a^2}{x} = 70$$

# Спасибо за урок



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

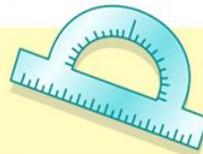
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$

