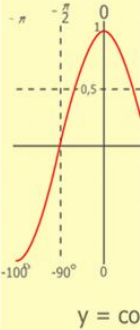
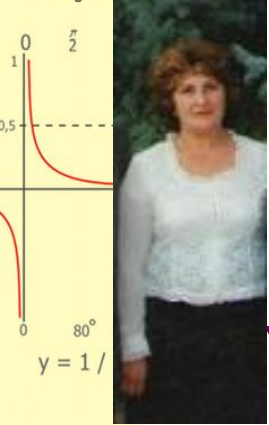
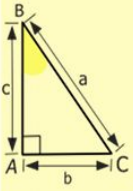
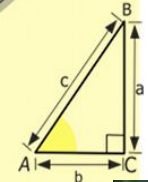
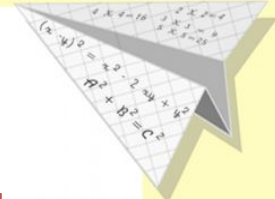
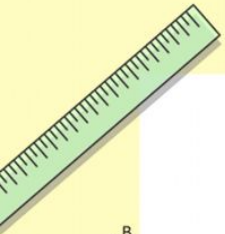


Свойства степени с натуральным показателем

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



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

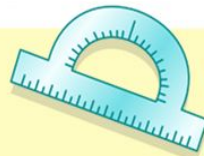
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



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

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

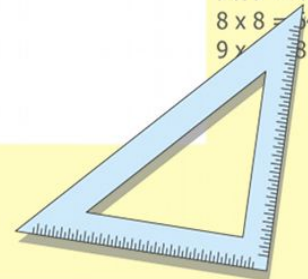
$$\sin 90^\circ = 1$$



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

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

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



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



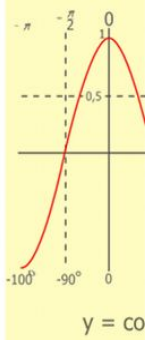
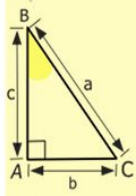
Оборудование: мультимедийная презентация, сигнальные карточки, перфокарты, учебник, тесты с выбором ответа, карта для самооценки, смайлики для рефлексии.

Необходимое аппаратное и программное обеспечение

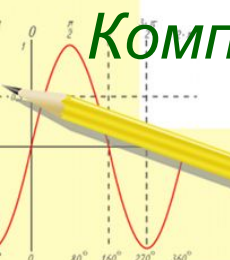
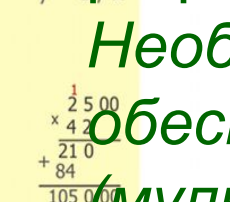
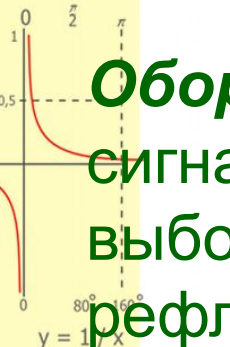
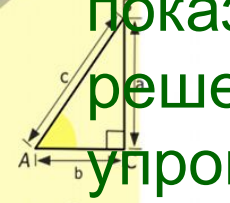
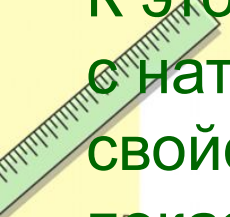
(мультимедийный проектор, программные средства)

Программы MS PowerPoint, MS Word.

Компьютер и мультимедийный проектор



- 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



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

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

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

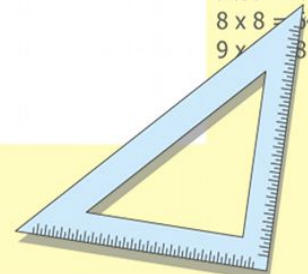


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

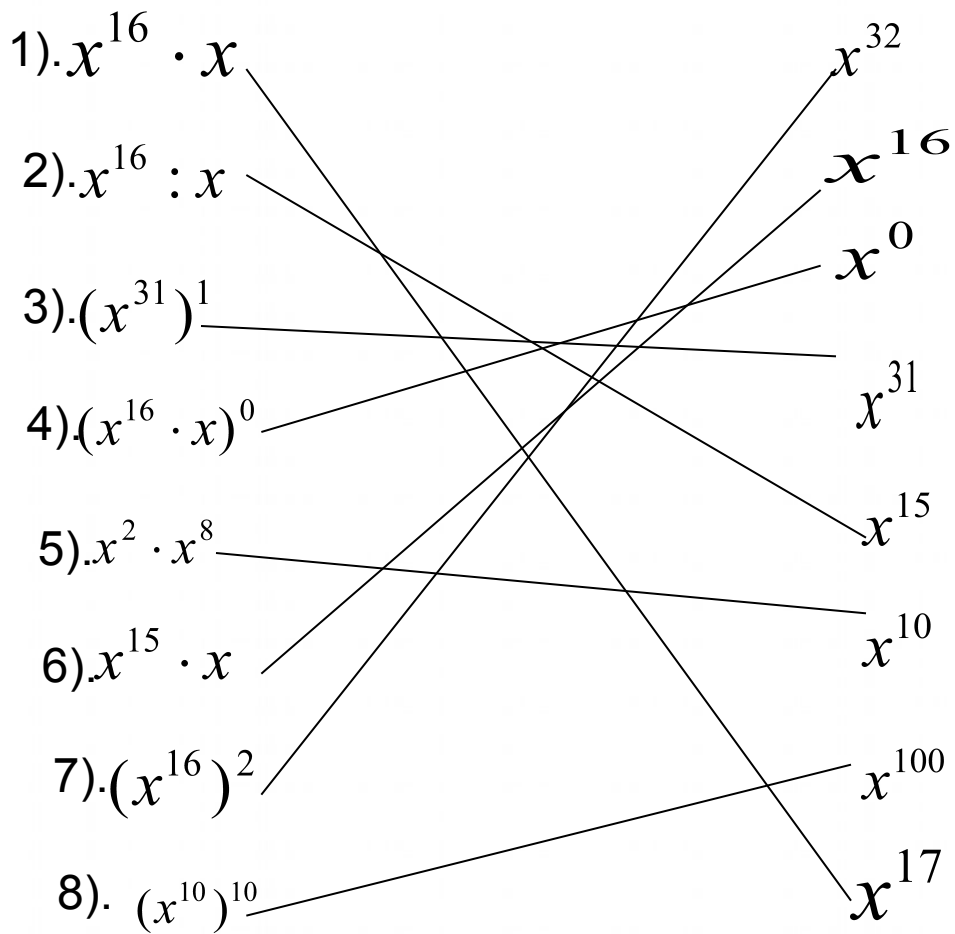
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

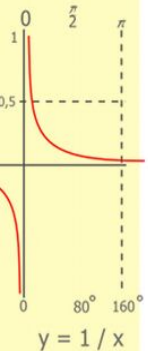
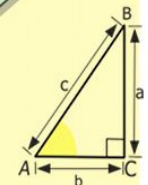
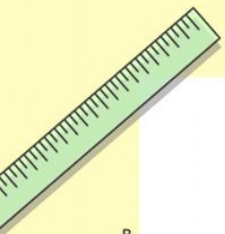
$$(x+y)(x-y) = x^2 - y^2$$



лабиринт



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



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

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

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

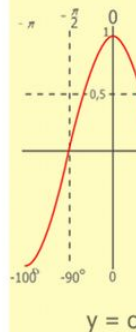
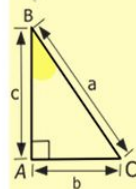
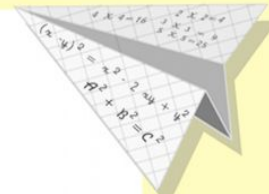


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

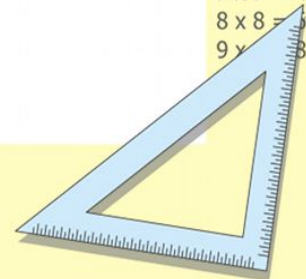
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

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

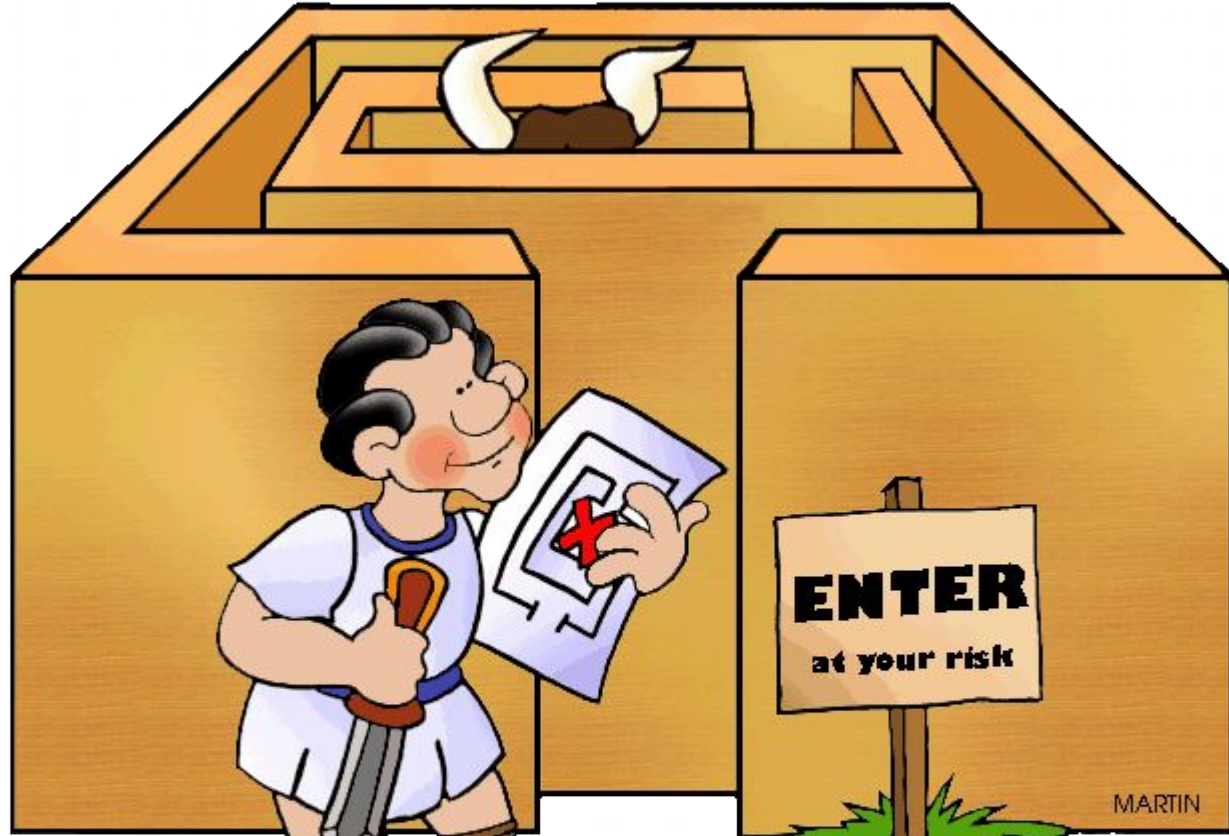


$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



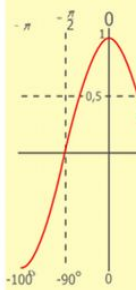
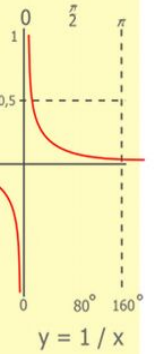
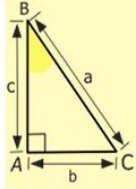
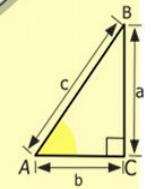
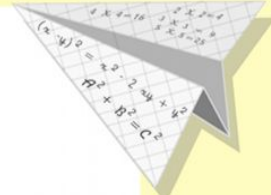
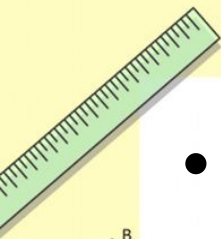
Историческая справка

- С чем связана «путеводная нить»?



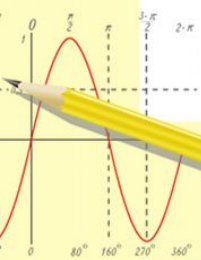
phillipmartin.com

MARTIN



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

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



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

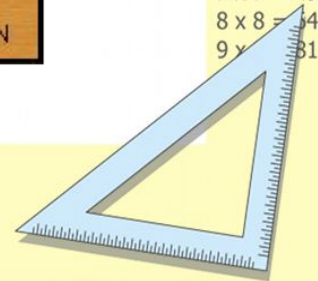
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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 ?

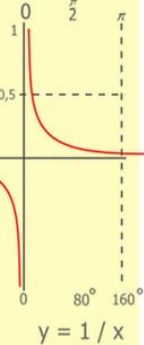
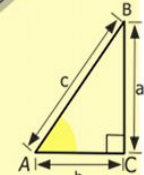
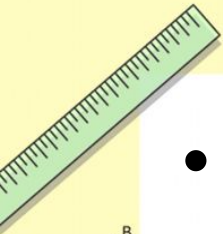
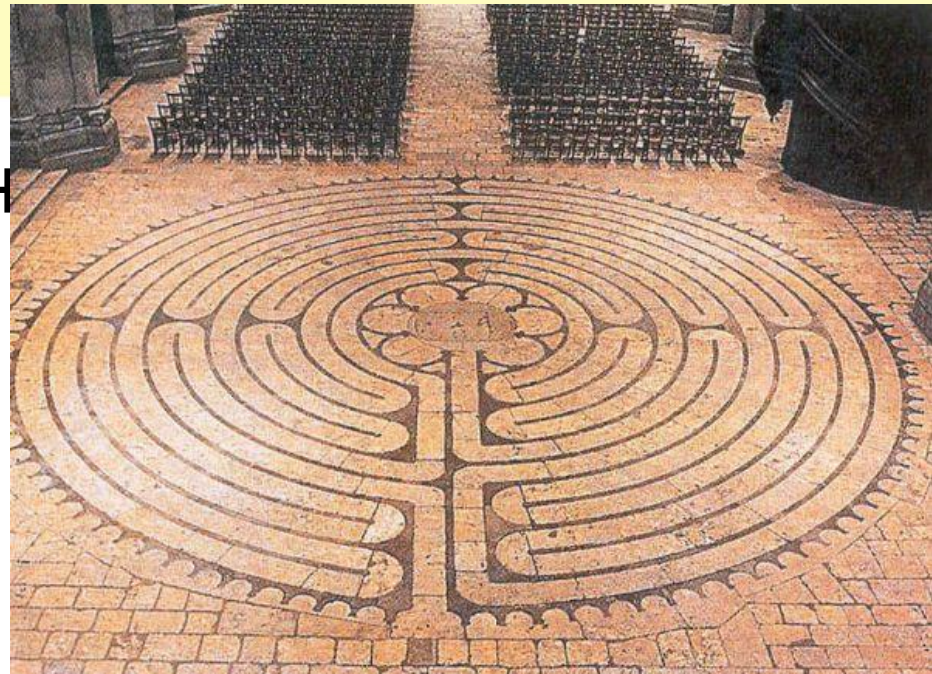
2. Как перемножить две степени с одинаковыми основаниями?

3. Как разделить две степени с одинаковыми основаниями?

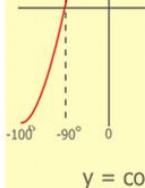
4. Как возвести степень в степень?

5. Как возвести произведение в степень?

6. Как возвести дробь в степень?



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



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



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

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

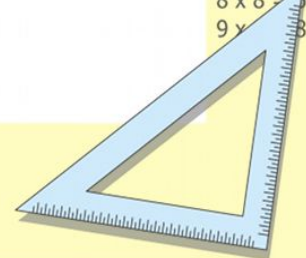
$$\sin 90^\circ = 1$$

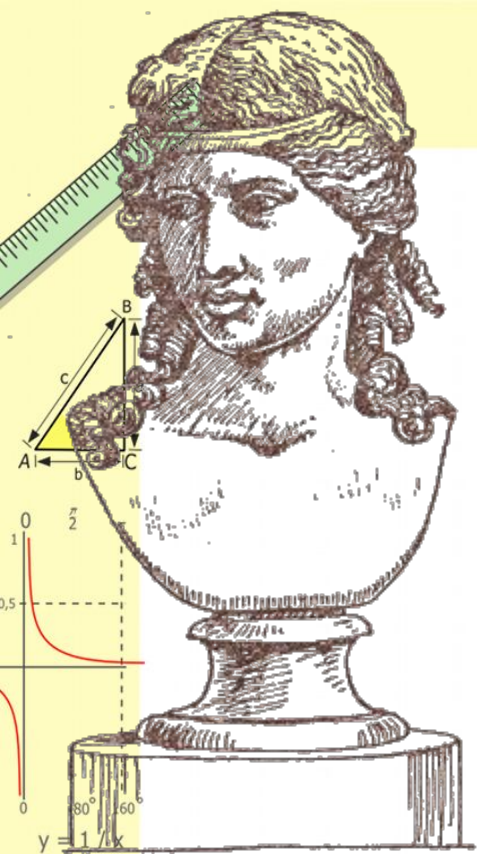


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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

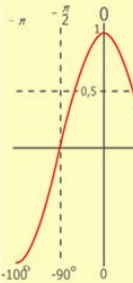
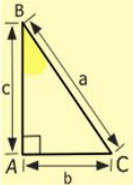
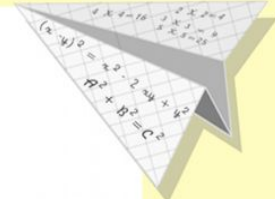




Степенью числа a с натуральным показателем n называется произведение n множителей, каждый из которых равен a .

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

множителей



$y = \cos$

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

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



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

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

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

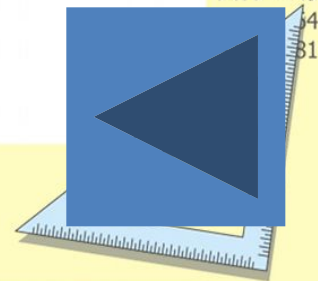


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

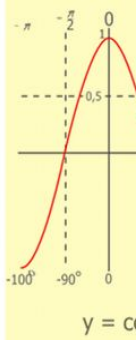
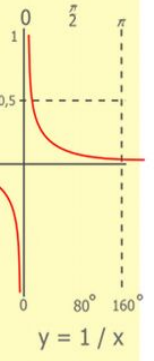
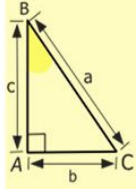
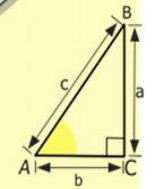
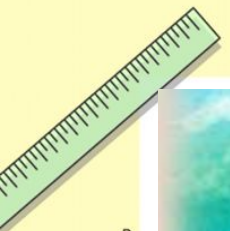
$$(x+y)(x-y) = x^2 - y^2$$

$$\frac{x}{70}$$



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

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



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

$2 \times 2 = 4$
 $3 \times 3 = 9$
 $4 \times 4 = 16$
 $5 \times 5 = 25$



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

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

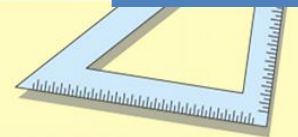
$\sin 90^\circ = 1$

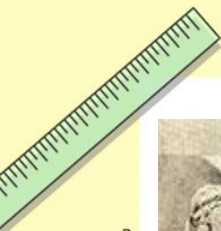


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

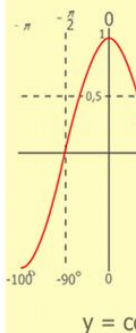
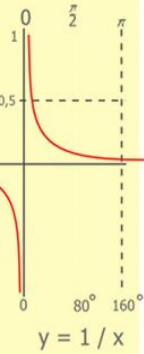
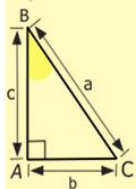
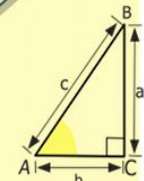
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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





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



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

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

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

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

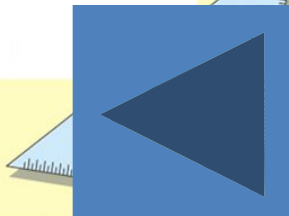
$$\sin 90^\circ = 1$$

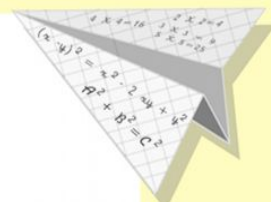
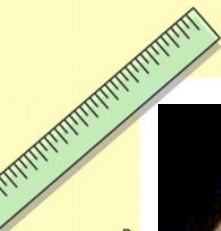


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

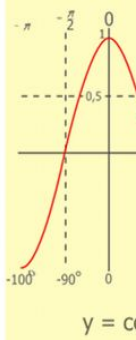
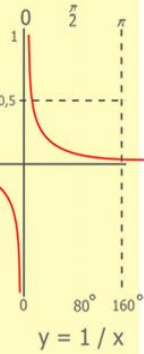
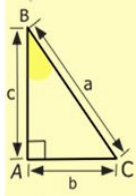
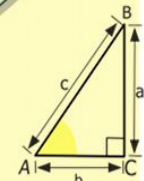
$$(x+y)(x-y) = x^2 - y^2$$





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

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



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

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

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

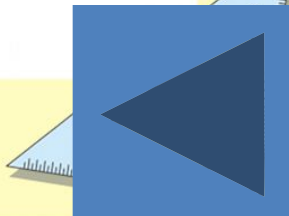
$$\sin 90^\circ = 1$$



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

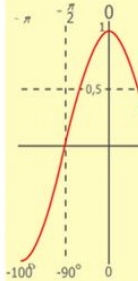
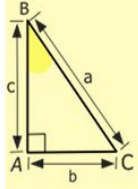
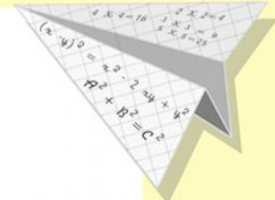
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



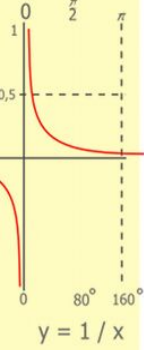
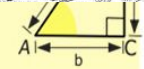


Чтобы возвести дробь в степень нужно в эту степень возвести числитель и знаменатель дроби



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

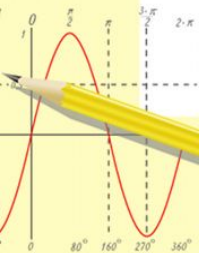


y = 1 / x

```

  1 2 5 00
x 4 2
-----
 21 0
+ 84
-----
105 0 00
    
```

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



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

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

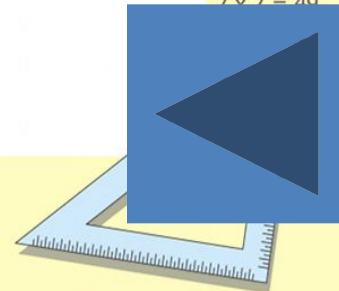
$$\sin 90^\circ = 1$$



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

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

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



б) Соедините «Нитью Ариадны» верные равенства

1)

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

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

2)

$$a^2 b^6$$

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

3)

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

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

4)

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

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

5)

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

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

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

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

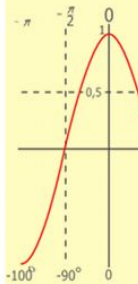
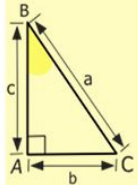
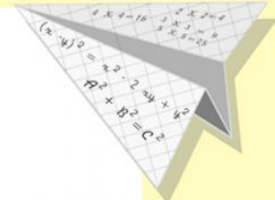
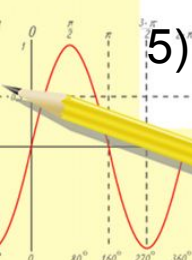
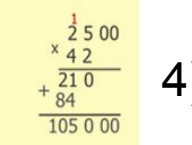
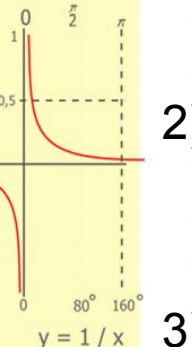
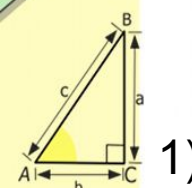
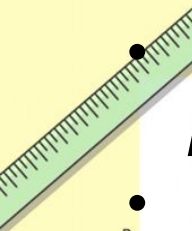
$$\sin 90^\circ = 1$$

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

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

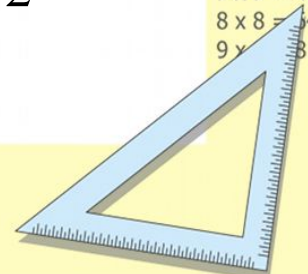
$$x = 70$$

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



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
- 8 x 8 = 64
- 9 x 9 = 81



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

+

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

-

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

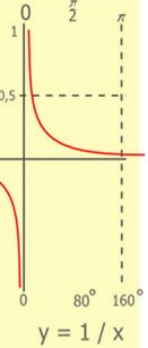
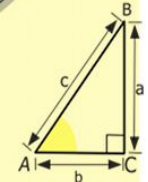
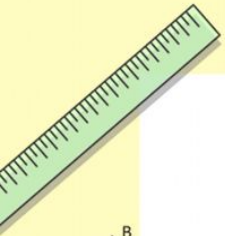
+

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

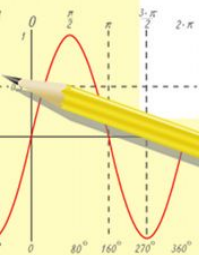
+

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

+



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



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

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

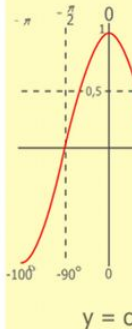
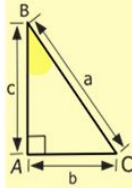
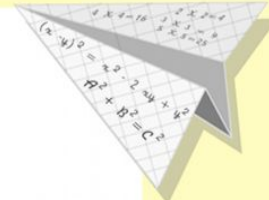
$$\sin 90^\circ = 1$$



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

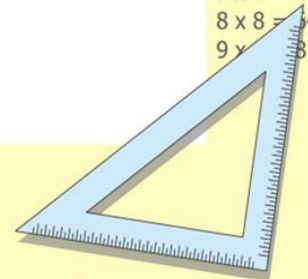
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

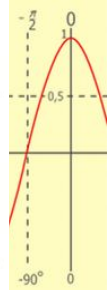
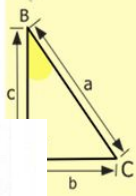
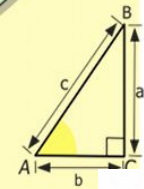
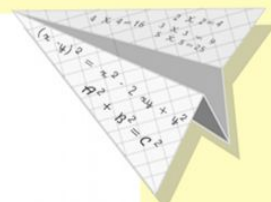
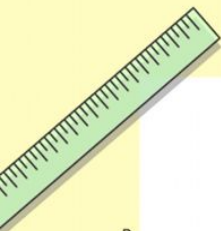
$$(x+y)(x-y) = x^2 - y^2$$



$$y = \cos$$

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





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



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

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

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

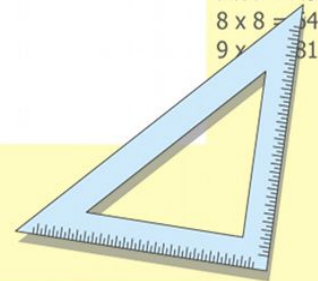


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

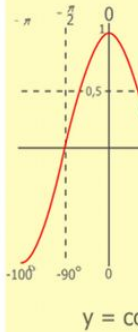
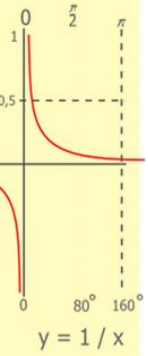
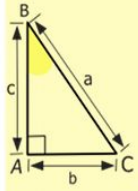
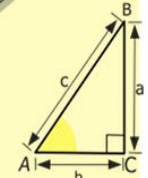
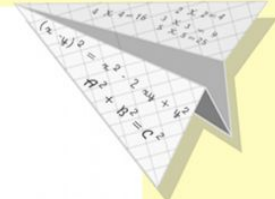
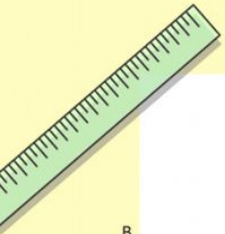
$$\hline x = 70$$

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



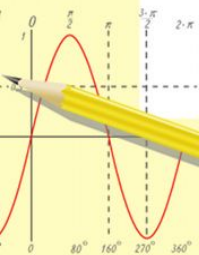
Проверь себя!

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}



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

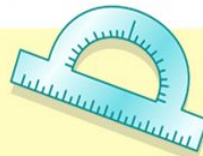
- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$
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$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

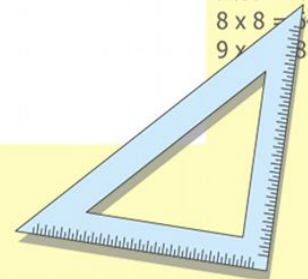
$$\sin 90^\circ = 1$$



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

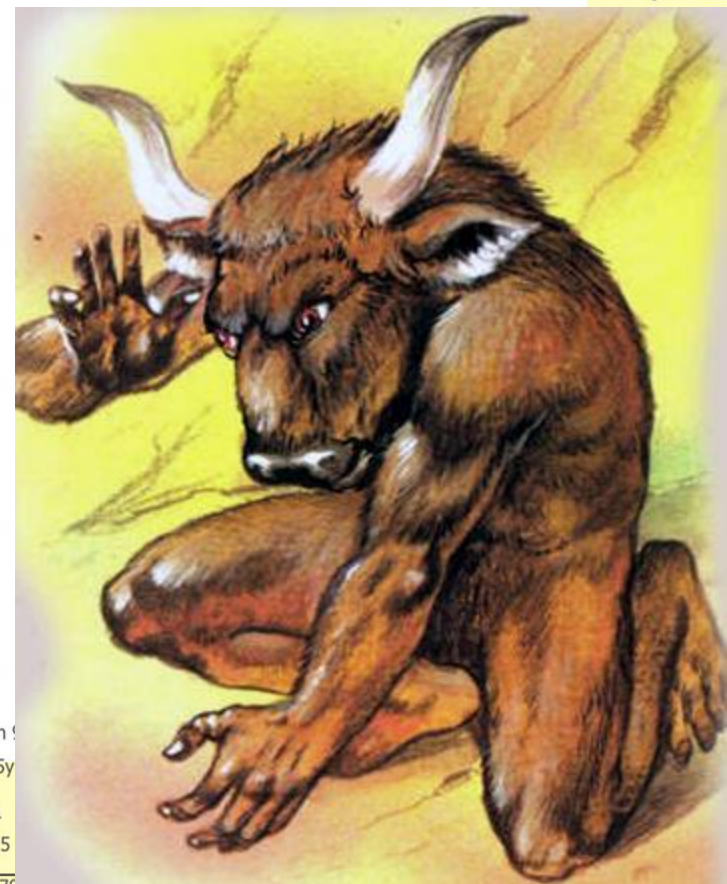
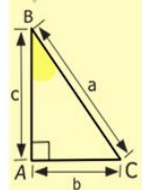
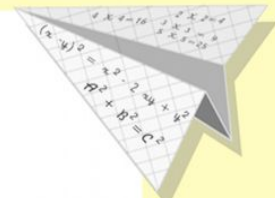
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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





Минотавр повержен!



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

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

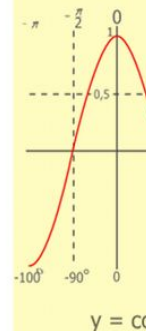
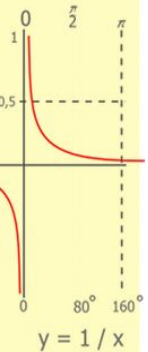
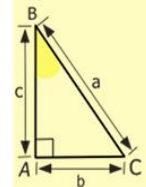
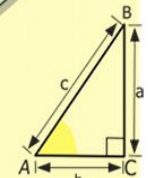
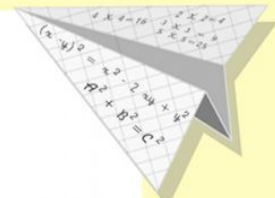
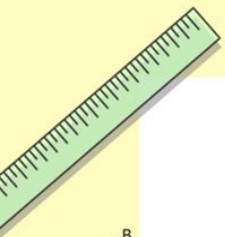
$$\sin 90^\circ = 1$$



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

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

$$x = 70$$



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

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

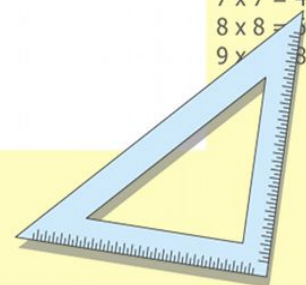
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$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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



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

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

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

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

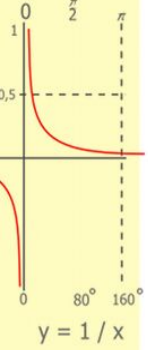
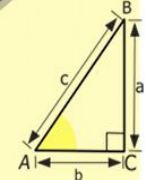
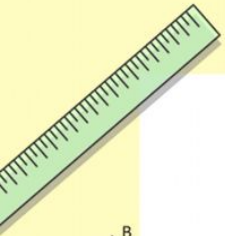
$$\sin 90^\circ = 1$$

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

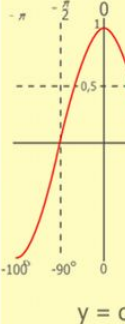
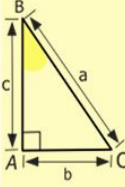
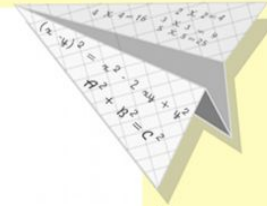
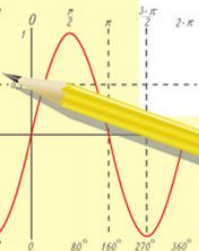
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

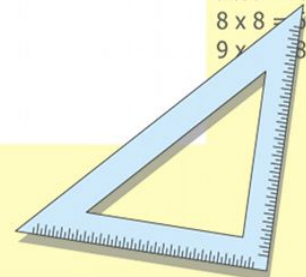
$$(x+y)(x-y) = x^2 - y^2$$



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



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



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

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

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

$\sin 90^\circ = 1$

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

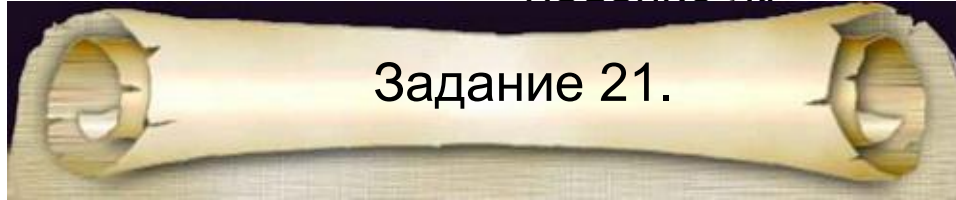
$\left(\frac{4^k}{4^3}\right)^2 = 4^6.$

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

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



- 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



Задание 21.

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.

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

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

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

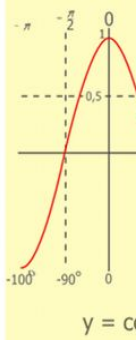
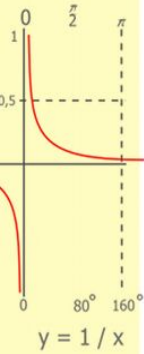
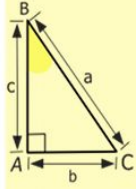
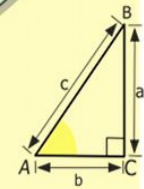
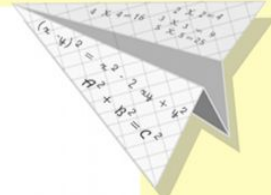
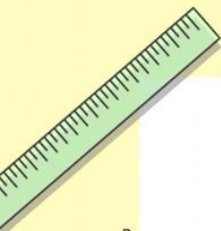
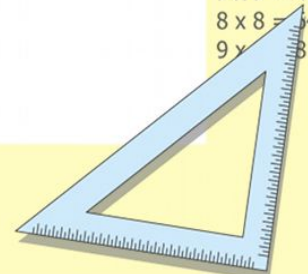


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

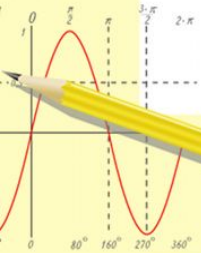
$$x = 70$$

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



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

- 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:

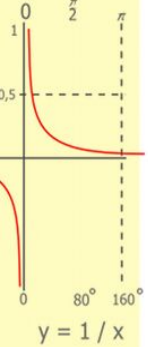
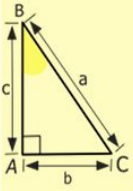
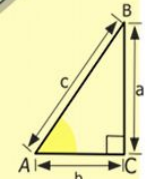
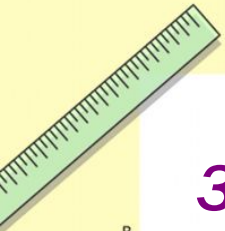
*Вспомнили и закрепили все свойства,

*Применяли данные свойства для решения заданий,

*Отрабатывали решения,

*Работали в группах, консультируя друг друга,

*Рассмотрели решение задания из II части ГИА -2014 по математике.



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

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



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

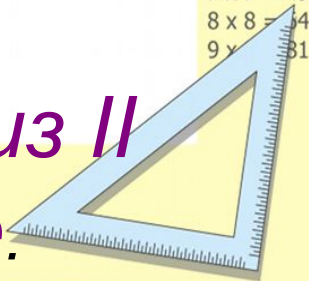
$$\frac{a+b}{c} = \frac{a+b}{c}$$

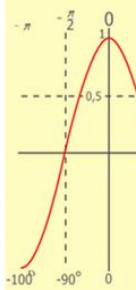
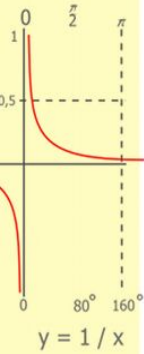
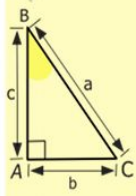
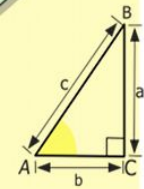
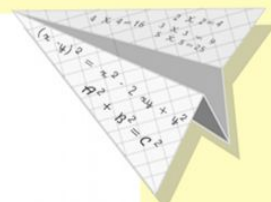
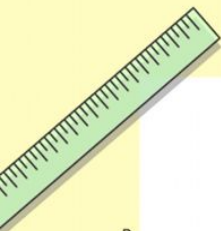
$$\sin 90^\circ = 1$$

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

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

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



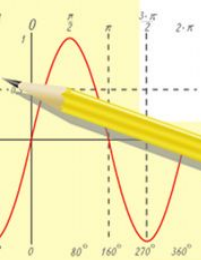


$y = 1/x$

$y = \cos$

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

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

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

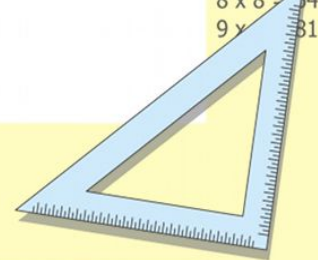
$\sin 90^\circ = 1$



$x = 25y + 45$

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

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



Домашнее задание

ТЕСТ 7. ОПРЕДЕЛЕНИЕ СТЕПЕНИ С НАТУРАЛЬНЫМ ПОКАЗАТЕЛЕМ

Вариант 1

Часть 1

1

2

3

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

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

1

2

3

4

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}

1

2

3

4

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

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

1

2

3

4

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

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

1

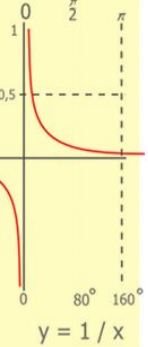
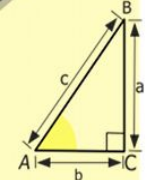
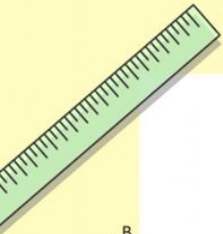
2

3

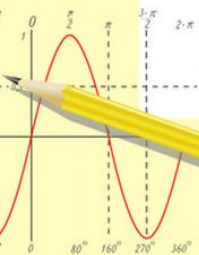
4

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

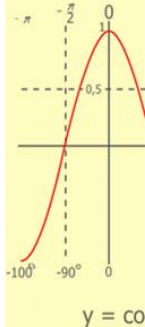
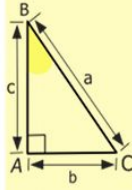
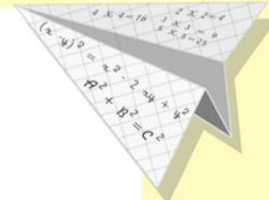
- 1) 4^{16}
- 2) 4^8
- 3) 4^2
- 4) 4^4



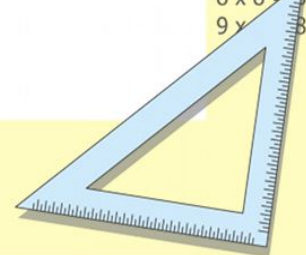
$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



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



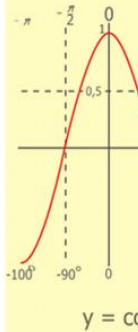
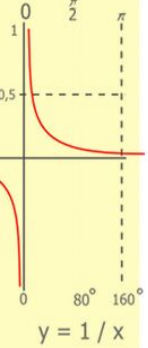
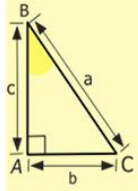
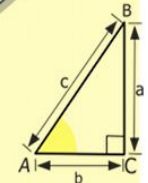
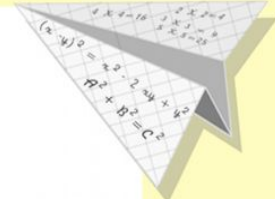
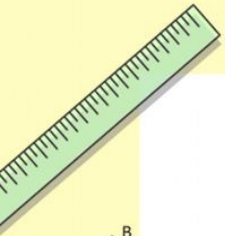
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
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- 8 x 8 = 64
- 9 x 9 = 81



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

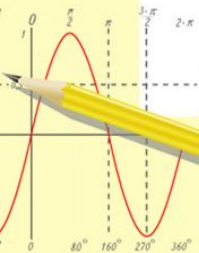
$$x^2 - 4^2$$

Спасибо за урок



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

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

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

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



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

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

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

