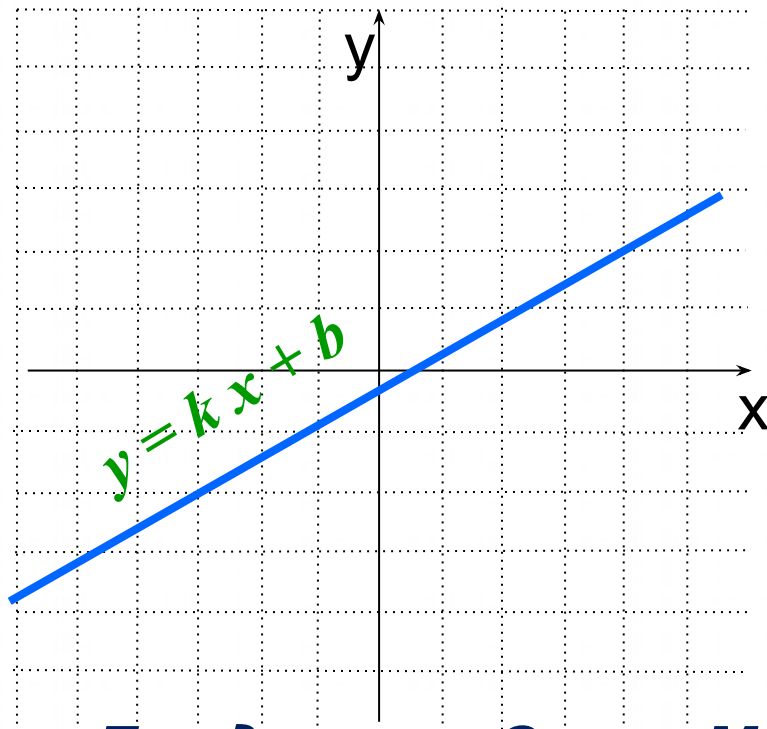
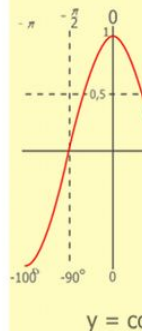
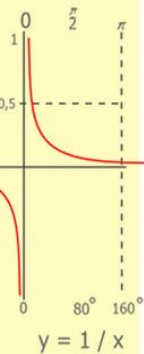
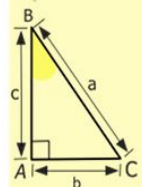
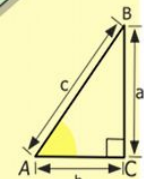
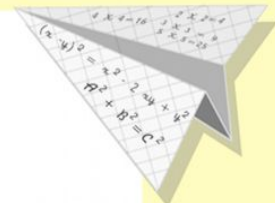
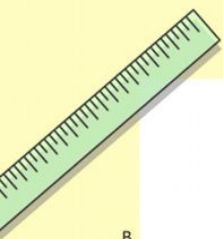


# Открытый урок по алгебре в 7 классе

## Линейная функция

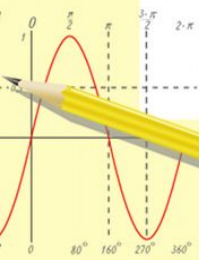


**Бондаренко Ольга Михайловна,  
учитель математики МОБУ  
Новобурейская СОШ №3**



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

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



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

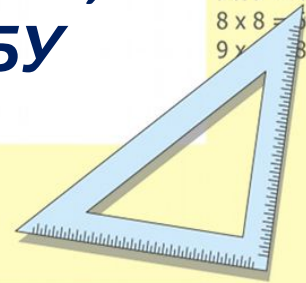
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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



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

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



# Цели и задачи урока:

## Образовательные:

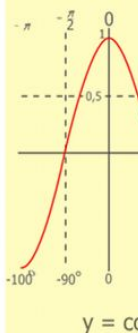
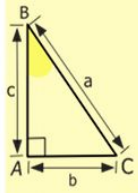
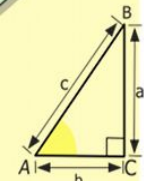
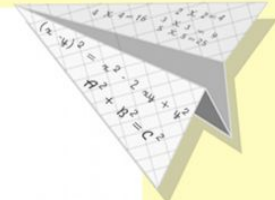
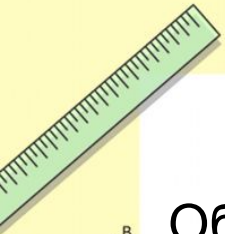
- проверить и закрепить знания, умения и навыки учащихся по данной теме;
- научить применять знания на практике

## Развивающие: расширение кругозора, получение новых знаний:

- научить решать уравнения графическим способом.

## Воспитательные:

- повышение интереса к изучению математики
- воспитание трудолюбия, внимательности, аккуратности и ответственности при выполнении заданий
- содействие развитию самоконтроля, любознательности
- развитие коммуникативной культуры



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

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



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

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

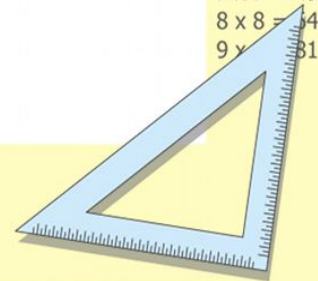
$$\sin 90^\circ = 1$$



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

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

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



На пути к Вершине ЗНАНИЙ



# Является ли **линейной** функция, заданная формулой?

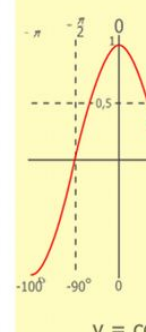
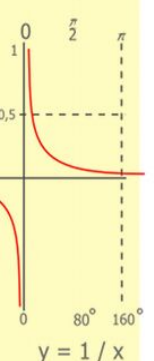
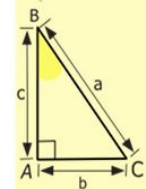
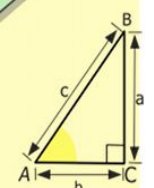
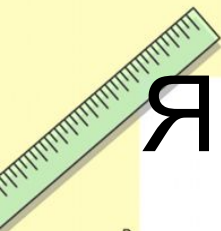
1)  $y = 5x + 7$

2)  $y = 8x^2 - 5$

3)  $y = \frac{1}{15}x$

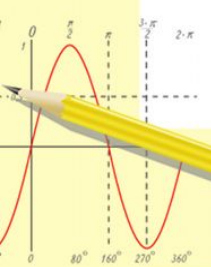
4)  $y = 70$

5)  $y = \frac{1}{x} + 16$



$\frac{1}{2} 5 00$   
 $\times 4 2$   
 $\hline$   
 $21 0$   
 $+ 84$   
 $\hline$   
 $105 0 00$

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



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

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

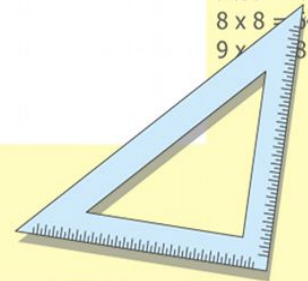
$\sin 90^\circ = 1$



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

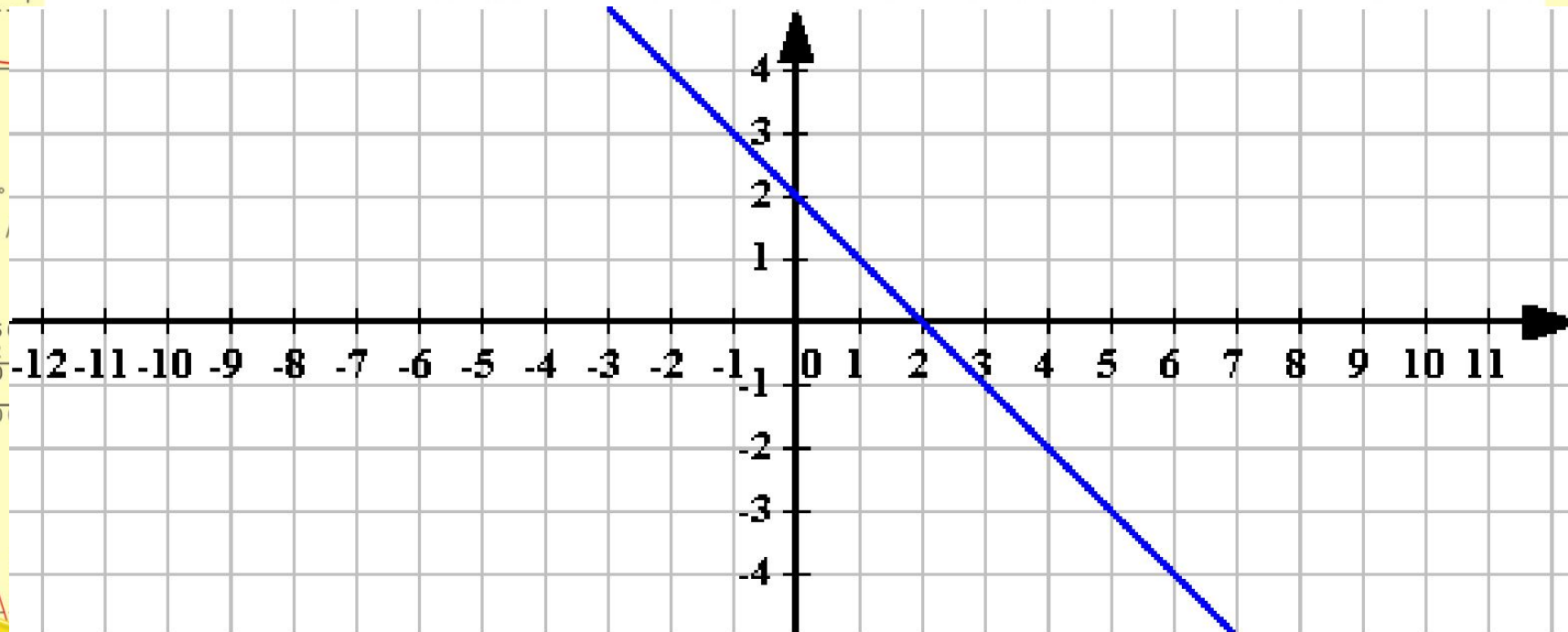
$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$

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



# Найдите ошибку в построенных графиках функций:

$$y = -x - 2$$



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

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

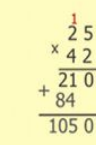
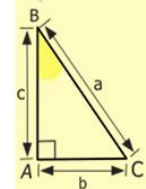
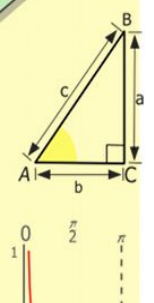
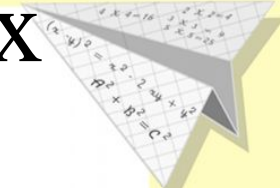
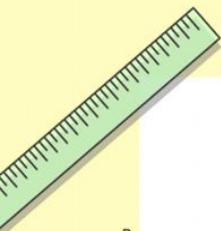
$$\sin 90^\circ = 1$$

$$x = 25y + 45$$

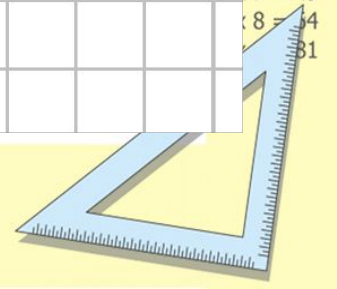
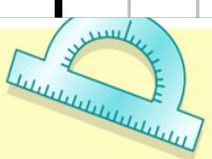
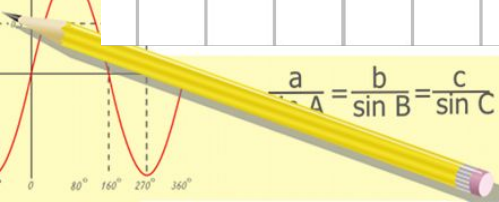
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

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

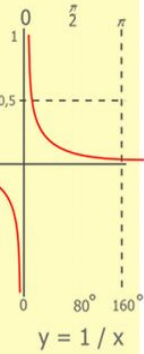
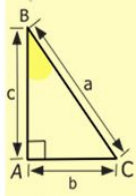
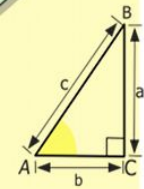
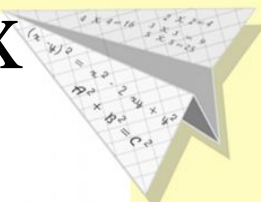
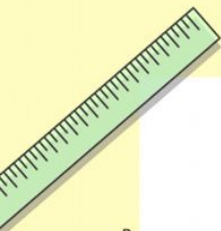
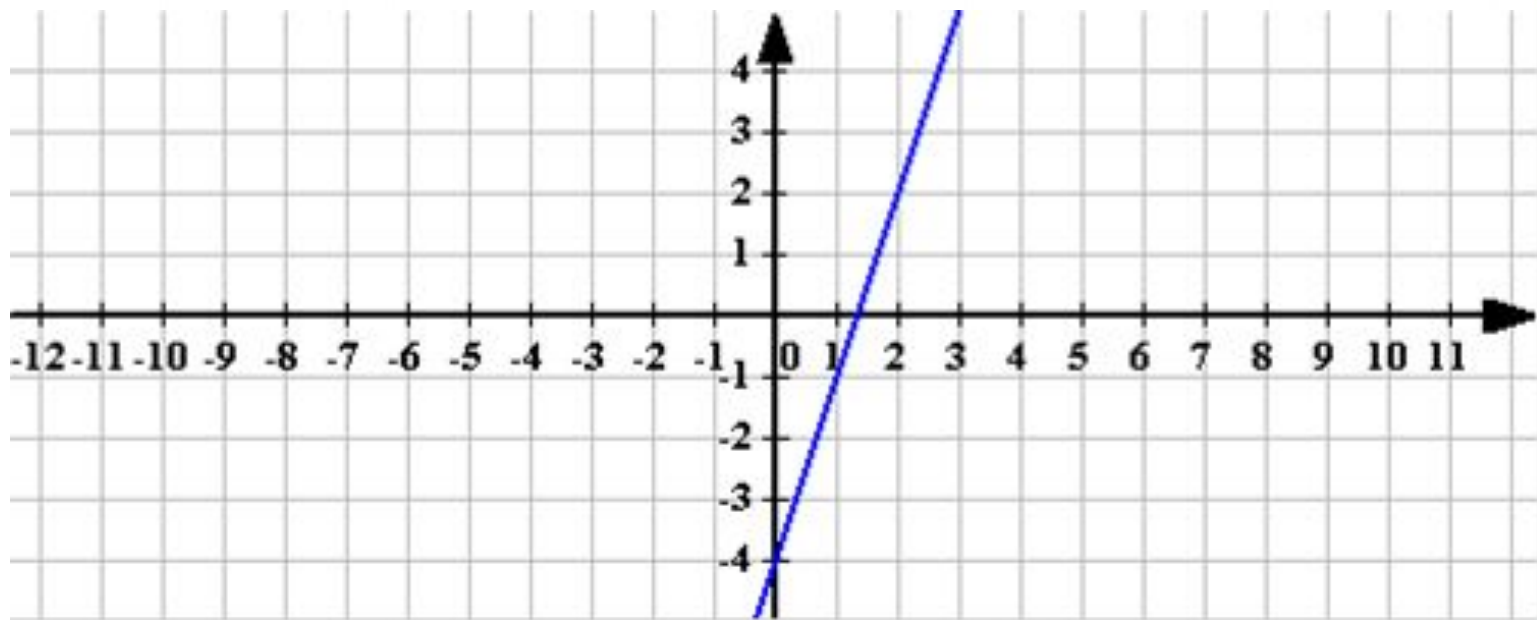


- 2 = 4
- 3 = 9
- 4 = 16
- 5 = 25
- 6 = 36
- 7 = 49
- 8 = 64
- 9 = 81



# Найдите ошибку в построенных графиках функций:

$$y = 3x$$



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

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



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

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

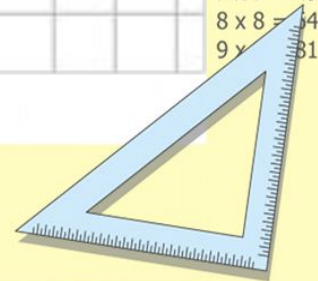
$$\sin 90^\circ = 1$$



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

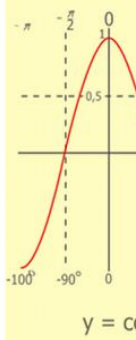
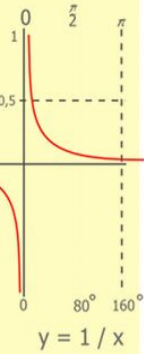
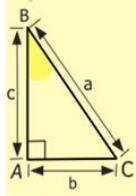
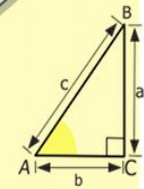
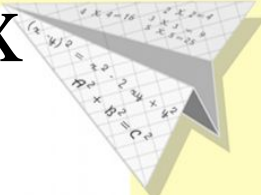
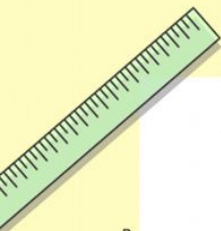
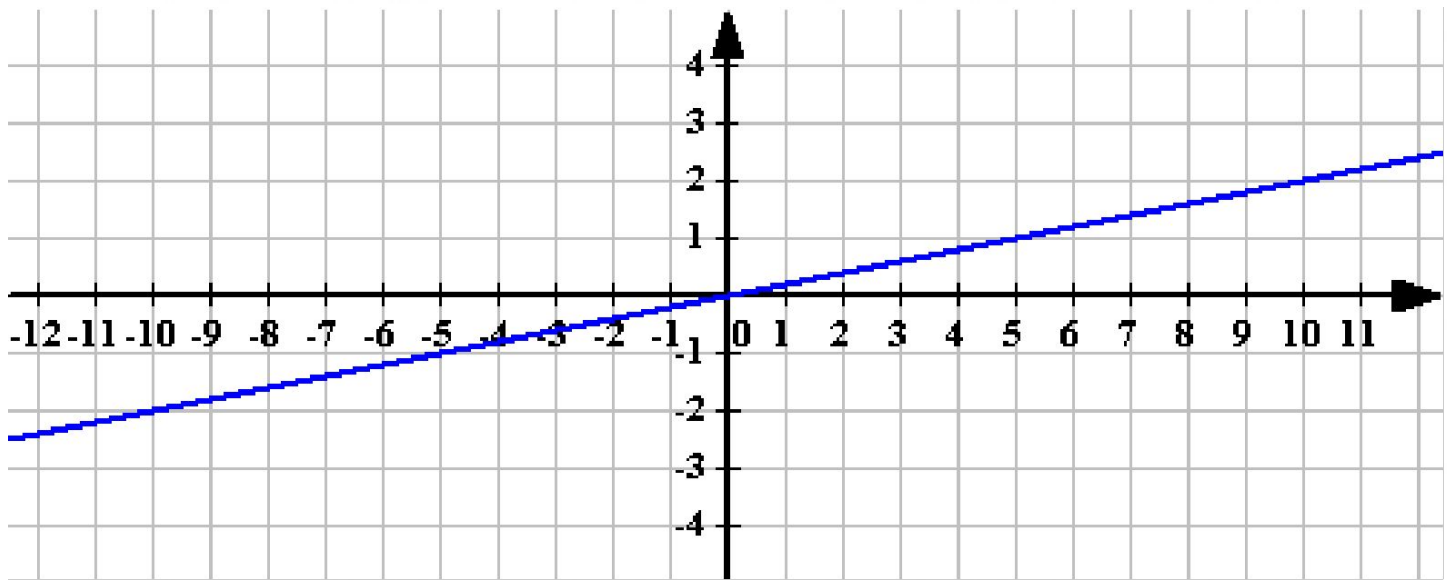
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



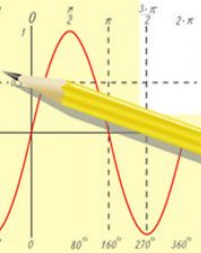
# Найдите ошибку в построенных графиках функций:

$$y = -1,5x$$



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

- 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



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

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

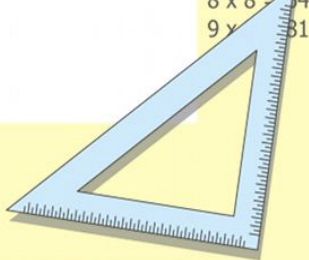
$$\sin 90^\circ = 1$$



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

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

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

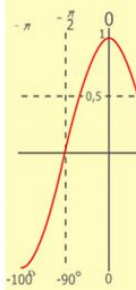
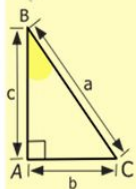
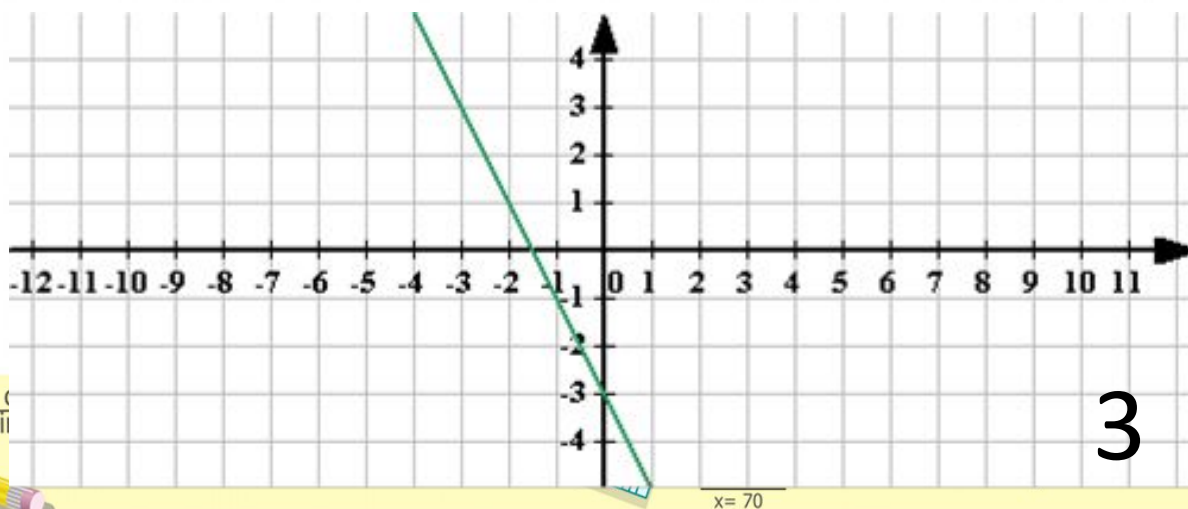
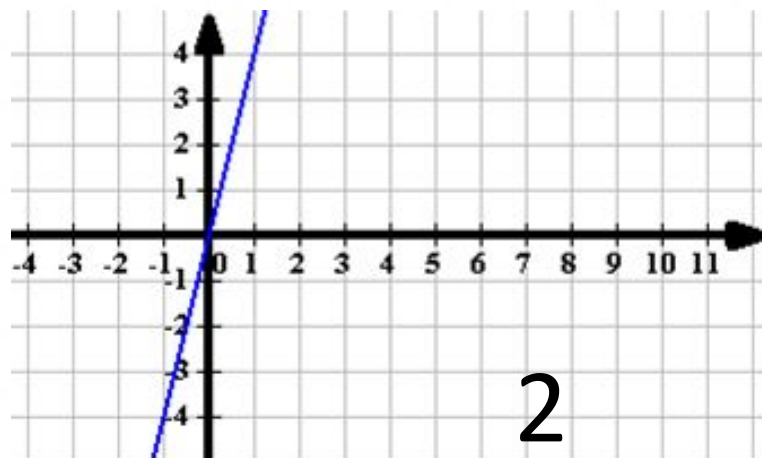
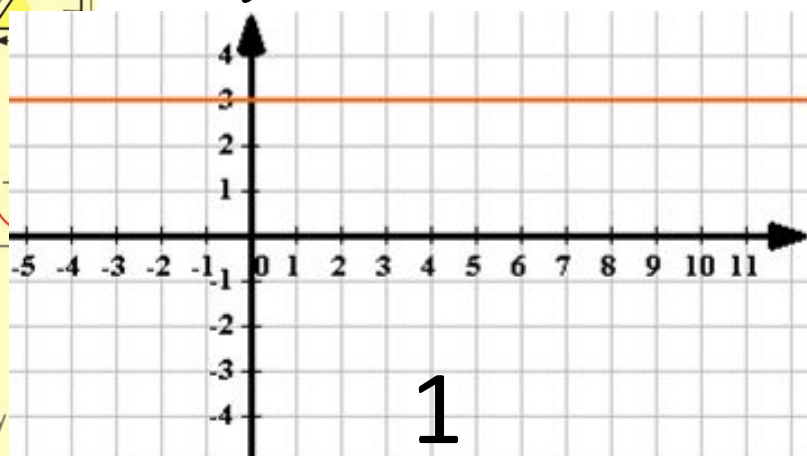


# Установите соответствие между графиком функции и формулой:

A:  $y = -2x - 3$

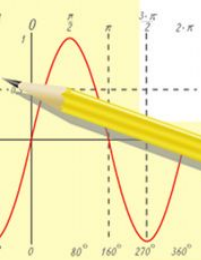
B:  $y = 3$

B:  $y = 4x$



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

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



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



Выяснить, проходит ли график функции  $y = -2x - 8$  через точку

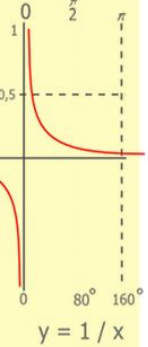
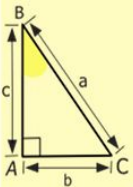
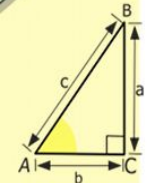
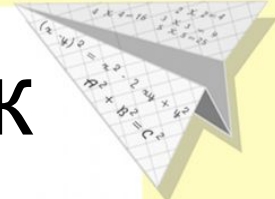
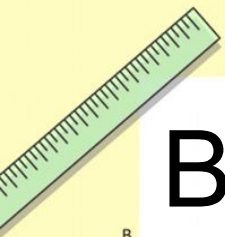
$$A(2; -4)$$

$$-4 = -2 \cdot 2 - 8$$

$$-4 = -4 - 8$$

$$-4 \neq -12$$

Ответ: график функции  $y = -2x - 8$  не проходит через точку  $A(2; -4)$



$$\begin{array}{r} 12500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$

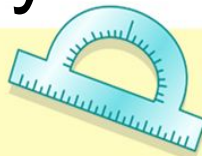
$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



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

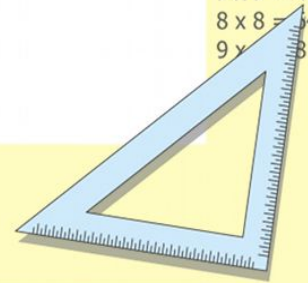
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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



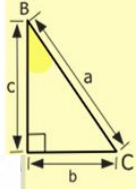
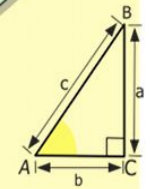
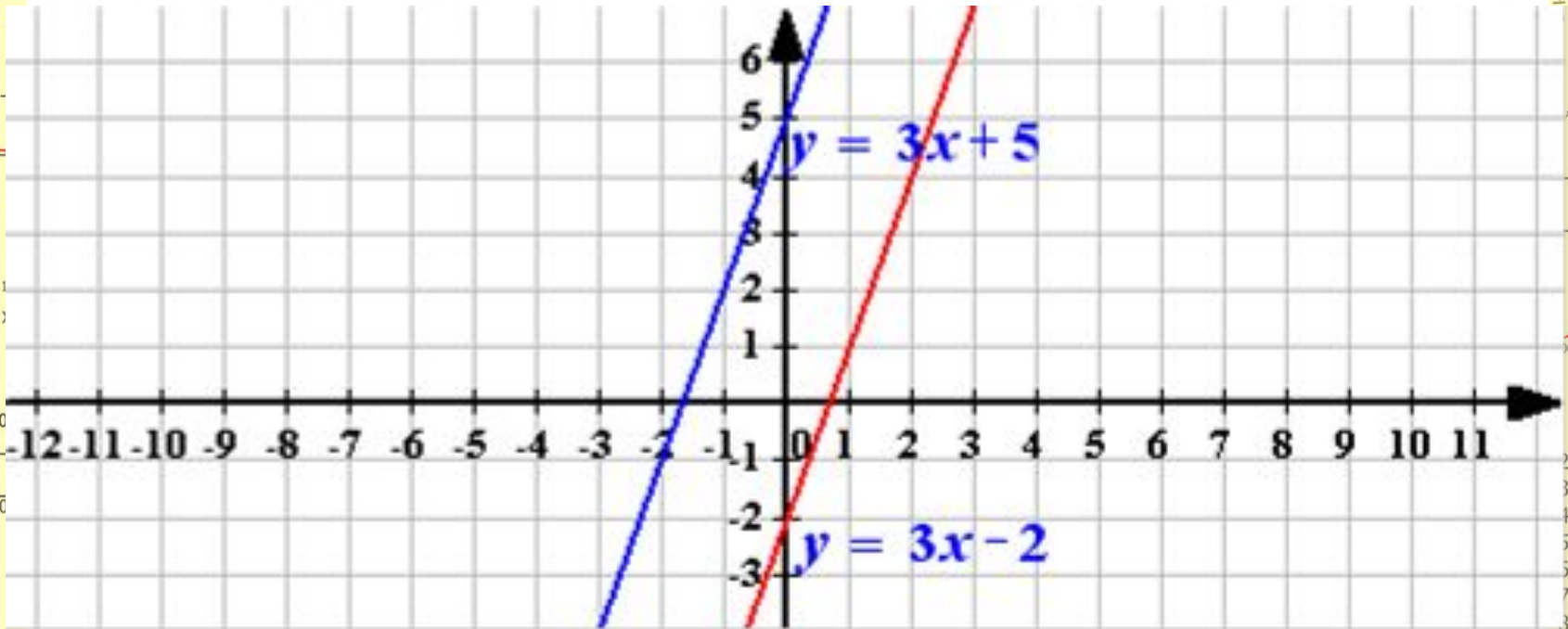
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



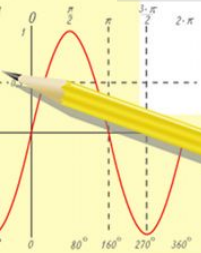
# Каково взаимное расположение графиков функций

$$y = 3x + 5 \text{ и } y = 3x - 2$$



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

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



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

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

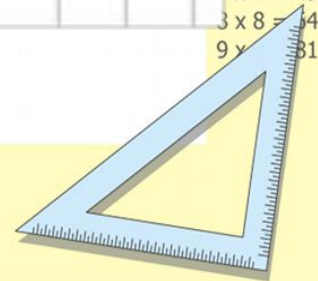
$$\sin 90^\circ = 1$$



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

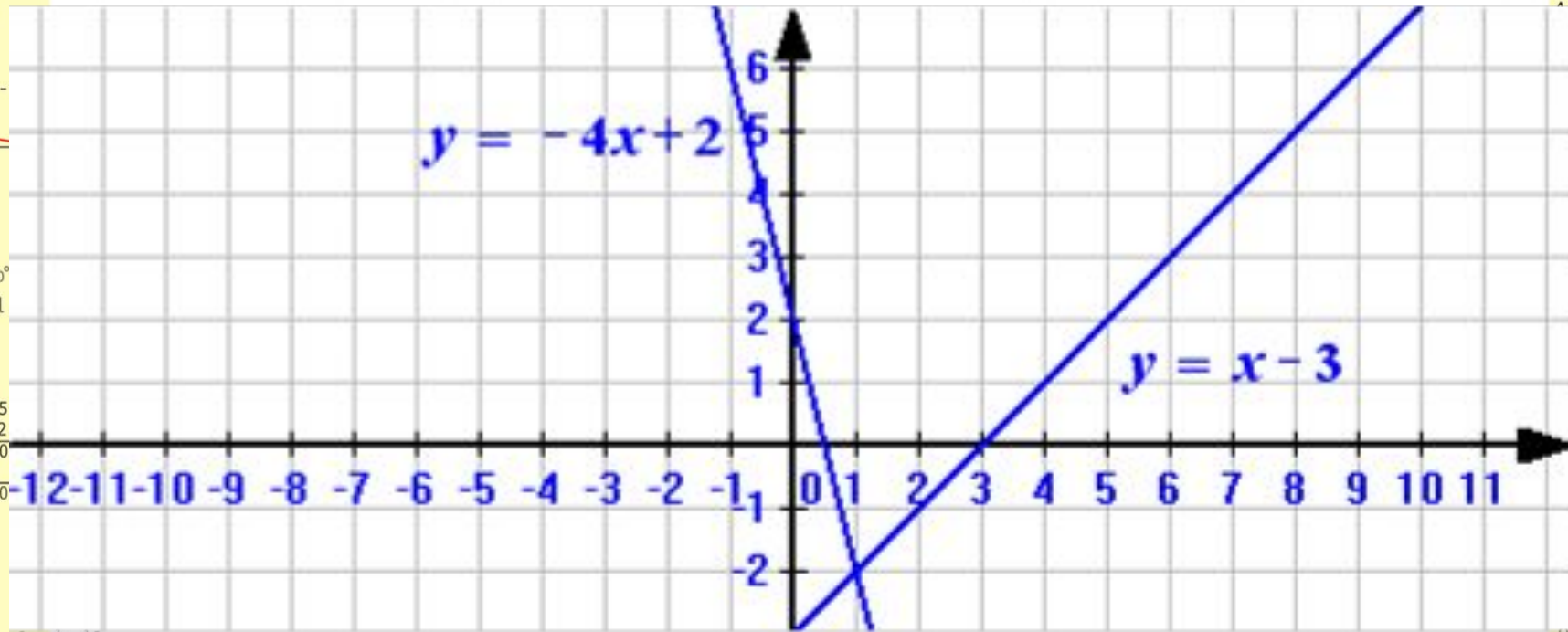
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



# Каково взаимное расположение графиков функций

$$y = -4x + 2 \text{ и } y = x - 3$$



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

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

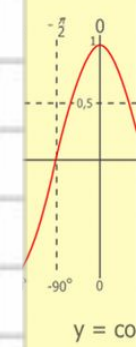
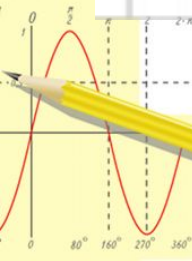
$$\sin 90^\circ = 1$$

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

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

$$x = 70$$

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



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

# Математический диктант

## 1 вариант

## 2 вариант

1. Даны функции. Отметьте те из них, которые являются линейными (+/-):

$$y = 5x - 3x^2$$

$$y = -3x$$

$$y = -\frac{4}{x} + 3$$

$$y = 5$$

$$y = \frac{x}{2} - 3$$

$$y = 2 + \frac{x}{3}$$

$$y = x^2 - 1$$

$$y = 5x$$

$$y = 5 - \frac{3}{x}$$

$$y = -3$$

2. Определите значения  $k$  и  $b$  для функции

$$y = -7 + 2x$$

$$y = 2 - 7x$$

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

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

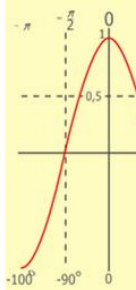
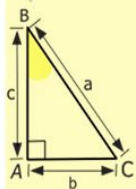
$$\sin 90^\circ = 1$$

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

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

$$x = 70$$

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



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

3. Чему равен угловой коэффициент прямой

$$y = -x + 2$$

$$y = x - 3$$

4. Пересекаются ли графики функций?

а)  $y = -7x + 2$  и  $y = -7x - 3$

а)  $y = -5x + 1$  и  $y = -5x - 4$

б)  $y = 10x - 8$  и  $y = -3x + 5$

б)  $y = 2x + 5$  и  $y = -4x + 3$

5. Выяснить, проходит ли график функции

$$y = \frac{x}{2} - 3$$

$$y = 2 + \frac{x}{3}$$

через точку  $C(26; 8)$

через точку  $M(-42; -12)$

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

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

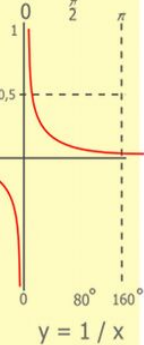
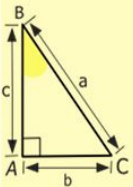
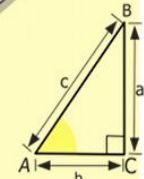
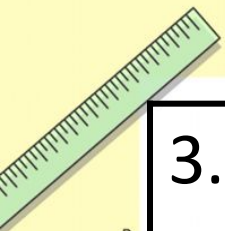
$$\sin 90^\circ = 1$$

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

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

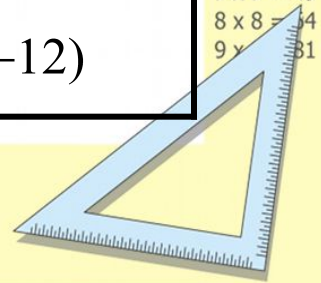
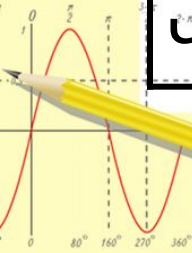
$$x = 70$$

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



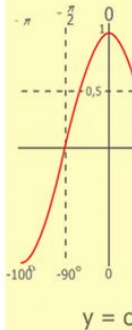
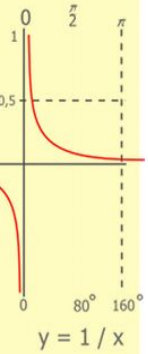
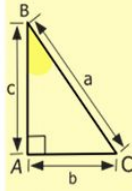
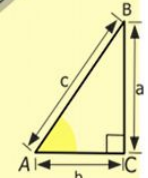
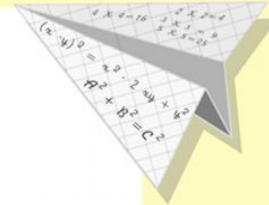
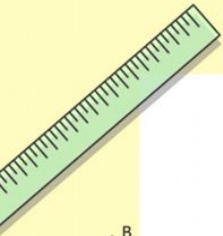
$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- 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



№ задания	1 вариант	2 вариант	Кол-во баллов (макс.)
1	$y = -3x$ $y = 5$ $y = \frac{x}{2} - 3$	$y = 2 + \frac{x}{3}$ $y = -5x$ $y = -3$	5
2	$k = 2$ $b = -7$	$k = -7$ $b = 2$	2
3	$k = -1$	$k = 1$	1
4	а) не пересекаются; б) пересекаются	а) не пересекаются; б) пересекаются	2
5	$8 = \frac{26}{2} - 3$ $8 = 13 - 3$ $8 \neq 10$ - график функции не проходит через точку С $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$ $\sin 90^\circ = 1$	$-12 = 2 + \frac{-42}{3}$ $-12 = 2 - 14$ $-12 = -12$ - график функции проходит через точку М $\begin{cases} y = \sin 90 \\ k = 25 + 45 \end{cases}$ $\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$ $(x+y)(x-y) = x^2 - y^2$ $x = 70$	5

13-15 баллов – оценка «5»  
 10-12 баллов – оценка «4»  
 5-9 баллов – оценка «3»



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

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

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

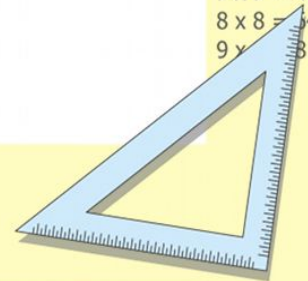
$$\sin 90^\circ = 1$$



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

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

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



# Решите уравнение: $2x - 10 = 2$

1 способ:

$$2x - 10 = 2$$

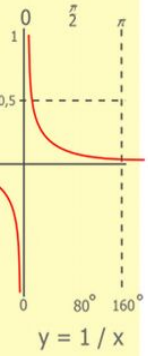
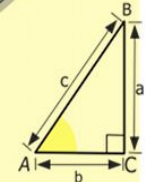
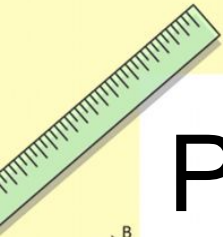
$$2x = 2 + 10$$

$$2x = 12$$

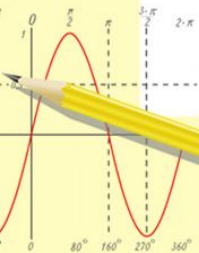
$$x = 12 : 2$$

$$x = 6$$

*Ответ: 6*



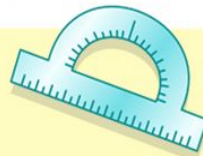
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



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

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

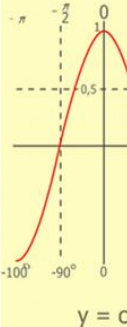
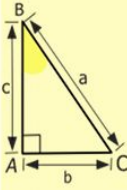
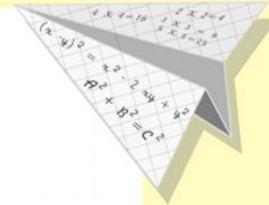
$$\sin 90^\circ = 1$$



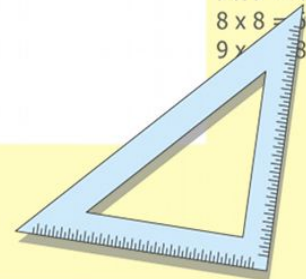
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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



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



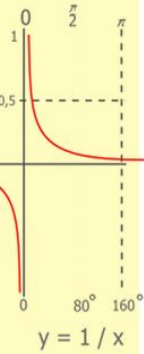
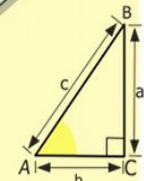
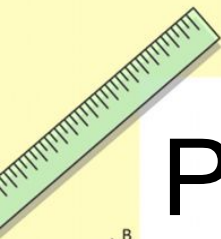


# Решите уравнение $2x - 10 = 2$

2 способ (графический):

$$y = 2x - 10$$

$$y = 2$$



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


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

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

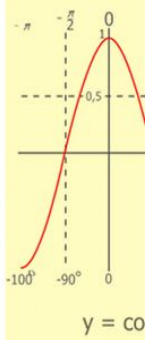
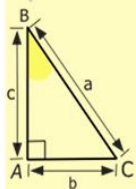
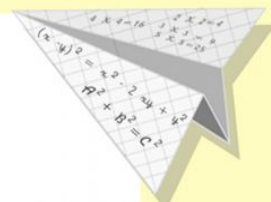
$$\sin 90^\circ = 1$$



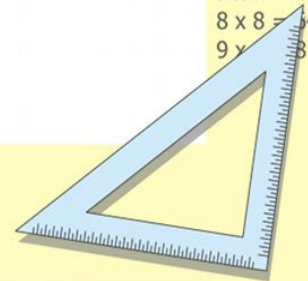
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

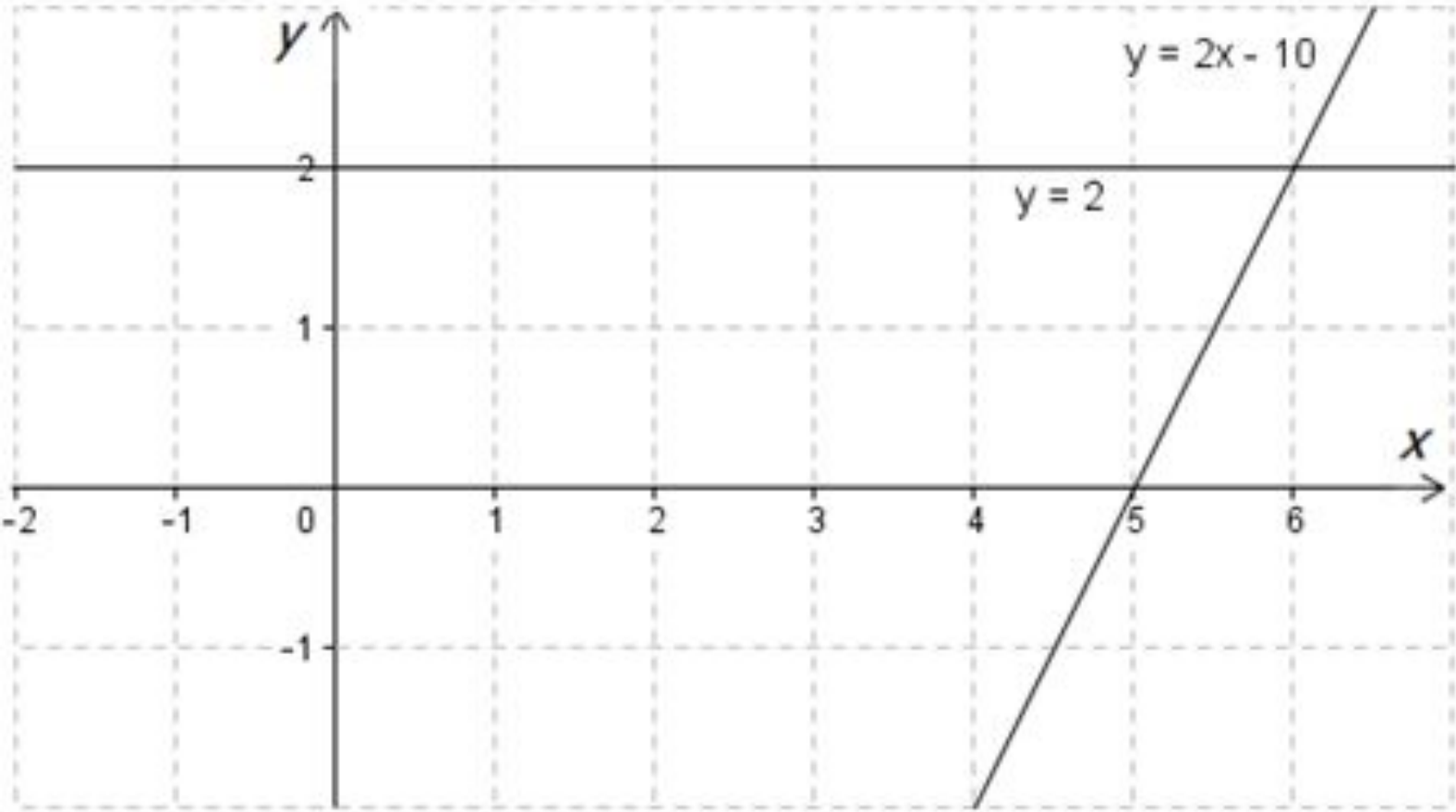
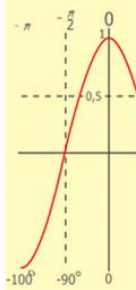
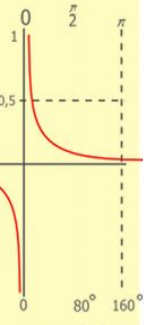
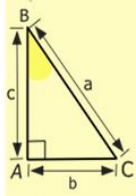
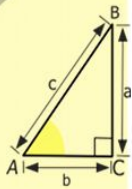
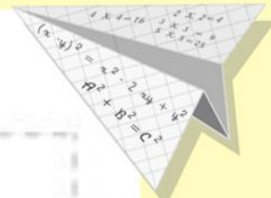
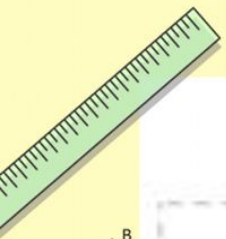
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



- $2 \times 2 = 4$
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1/2 5 00  
x 4 2  
21 0  
+ 84  
105 0 00

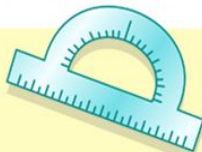
- 2 x 2 = 4
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

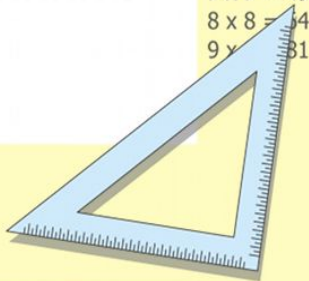
sin 90° = 1

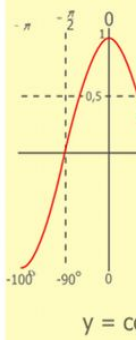
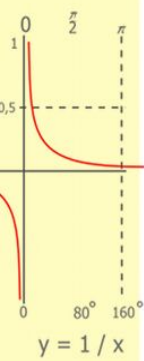
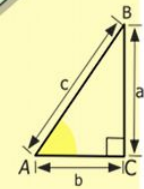
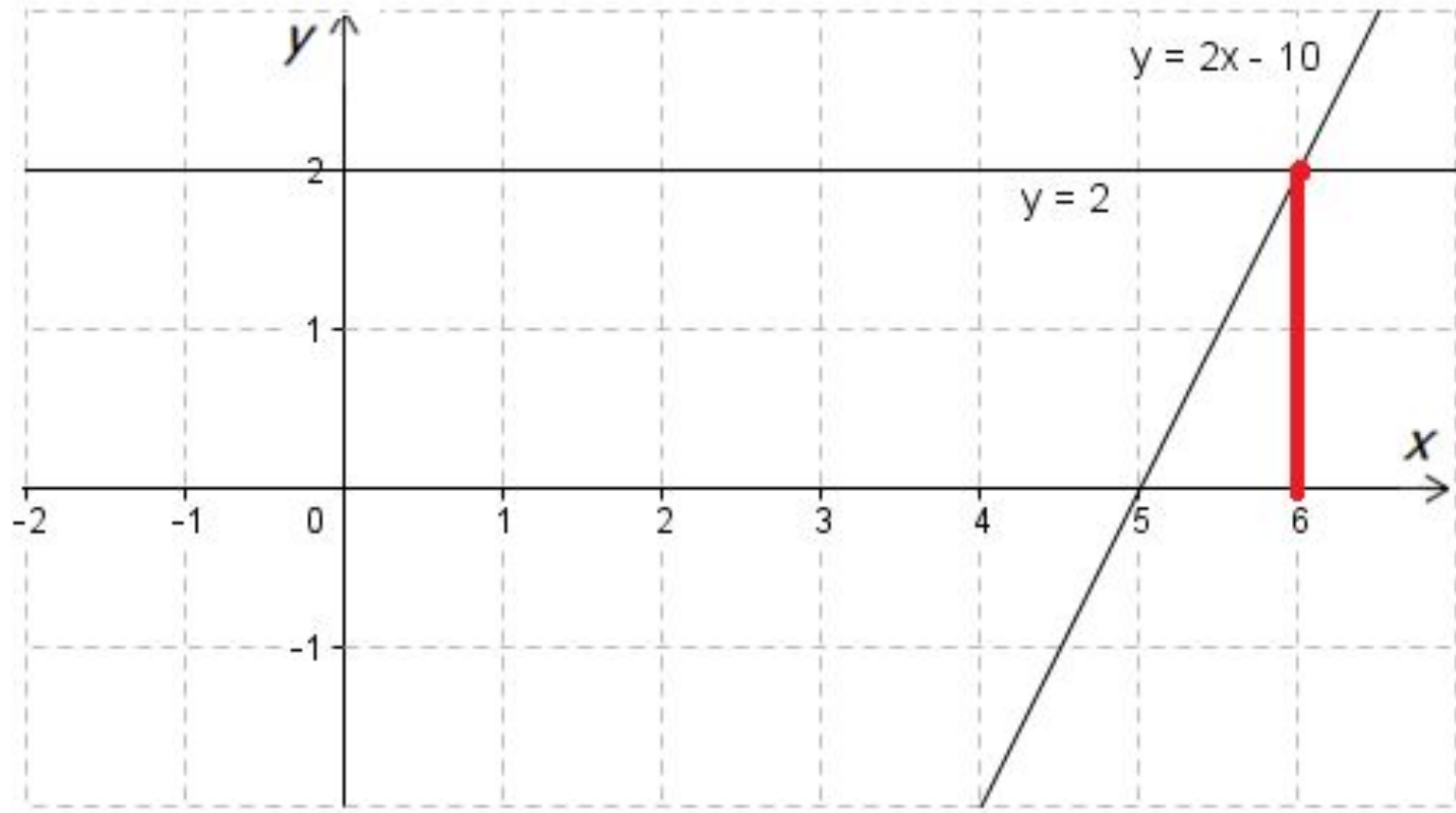
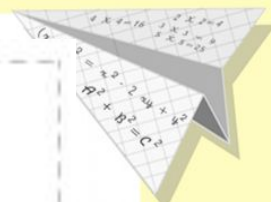
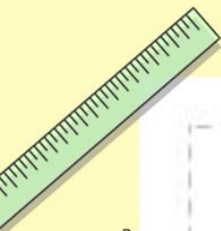


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

(x+y)(x-y) = x² - y²

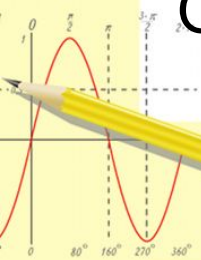




$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
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- $9 \times 9 = 81$

Ответ: 6



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

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

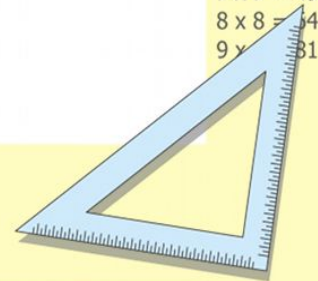
$\sin 90^\circ = 1$



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

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

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

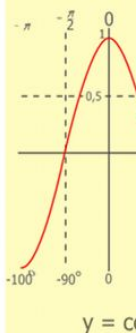
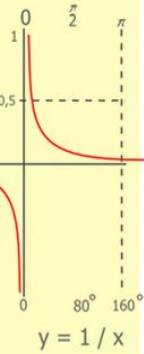
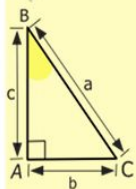
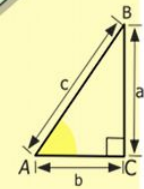
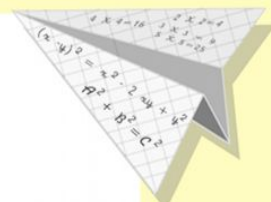
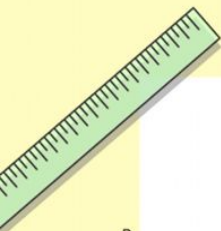




# Домашнее задание:

№ 327 (Г),

Решить линейное уравнение  $-5x + 16 = -6$   
графическим способом



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

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



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

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

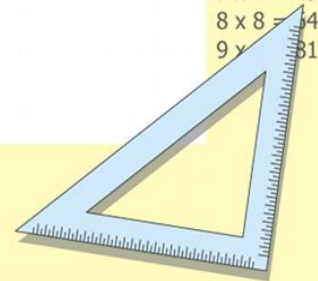
$$\sin 90^\circ = 1$$



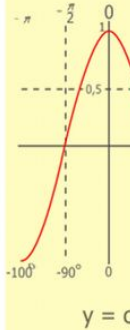
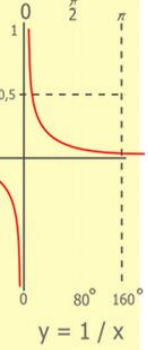
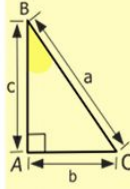
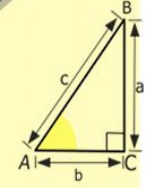
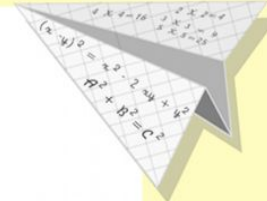
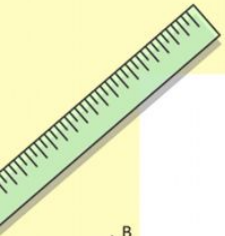
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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

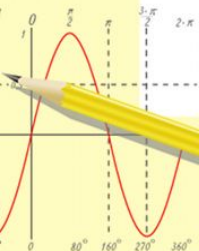


# Рефлексия



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

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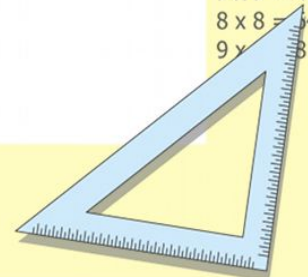
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**Спасибо за  
внимание и  
за работу  
на уроке!**

