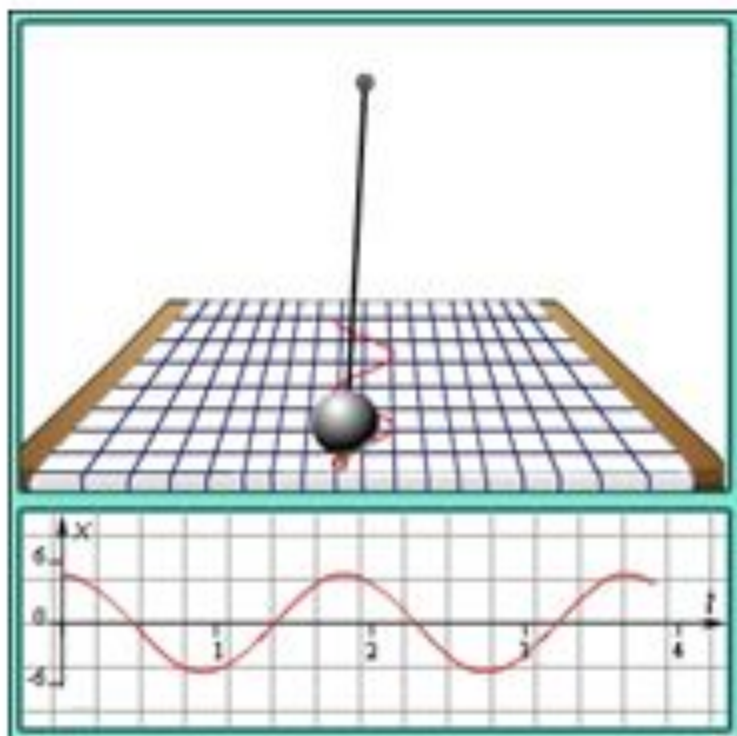


Колебания маятника



Маятник движется по кривой,
называемой косинусом

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

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



$$\begin{cases} y = \sin 90 \\ x = 20y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ y = 30 \end{cases}$$

$$(x_1/y_1) = x^2 - y^2$$



$$\begin{array}{r} 1500 \\ \times 42 \\ \hline 3000 \\ 6000 \\ \hline 63000 \end{array}$$

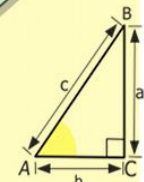
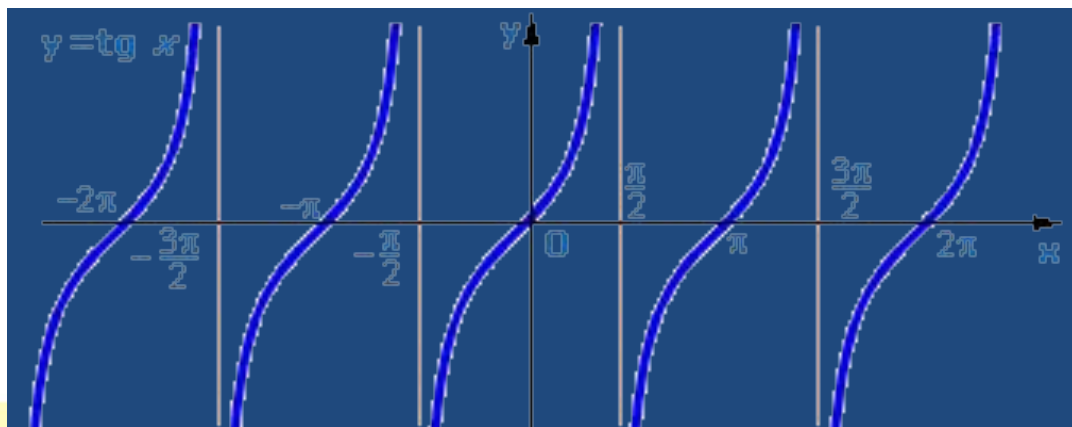
$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$

Движение рыб в воде происходит по закону синуса или косинуса, если зафиксировать точку на хвосте, а потом рассмотреть траекторию движения



При плавании тело рыбы принимает форму кривой, которая напоминает график функции

$y = \text{tg} x$



$$\begin{array}{r} 1\ 2\ 5\ 00 \\ \times 4\ 2 \\ \hline 21\ 0 \\ + 84 \\ \hline 105\ 0\ 00 \end{array}$$



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

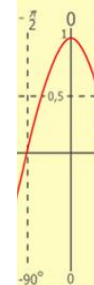
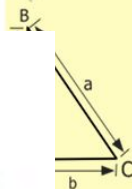
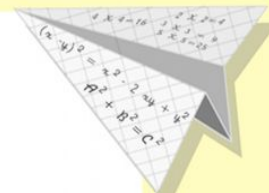
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$\sin 90^\circ = 1$



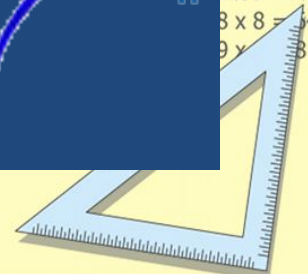
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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

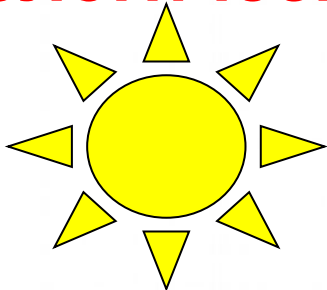


$y = \cos$

- 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

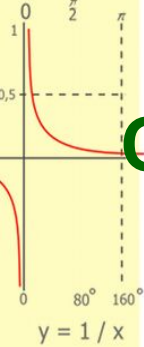
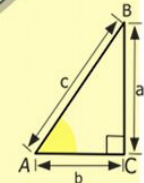


Более простое понятие –
это **биологические часы**

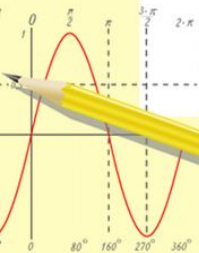


Связано оно с суточным движением Земли вокруг своей оси.

Мы живем в периоде -
день-ночь,
чередование сна
и бодрствования



$$\begin{array}{r} 1\ 2\ 5\ 00 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 105\ 000 \end{array}$$

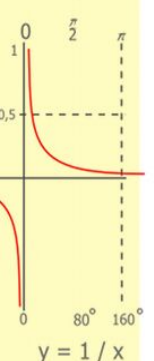
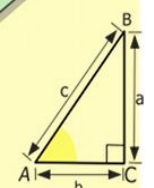
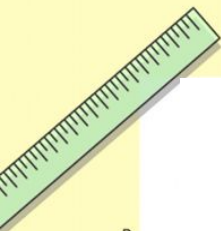


$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

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





$y = 1/x$

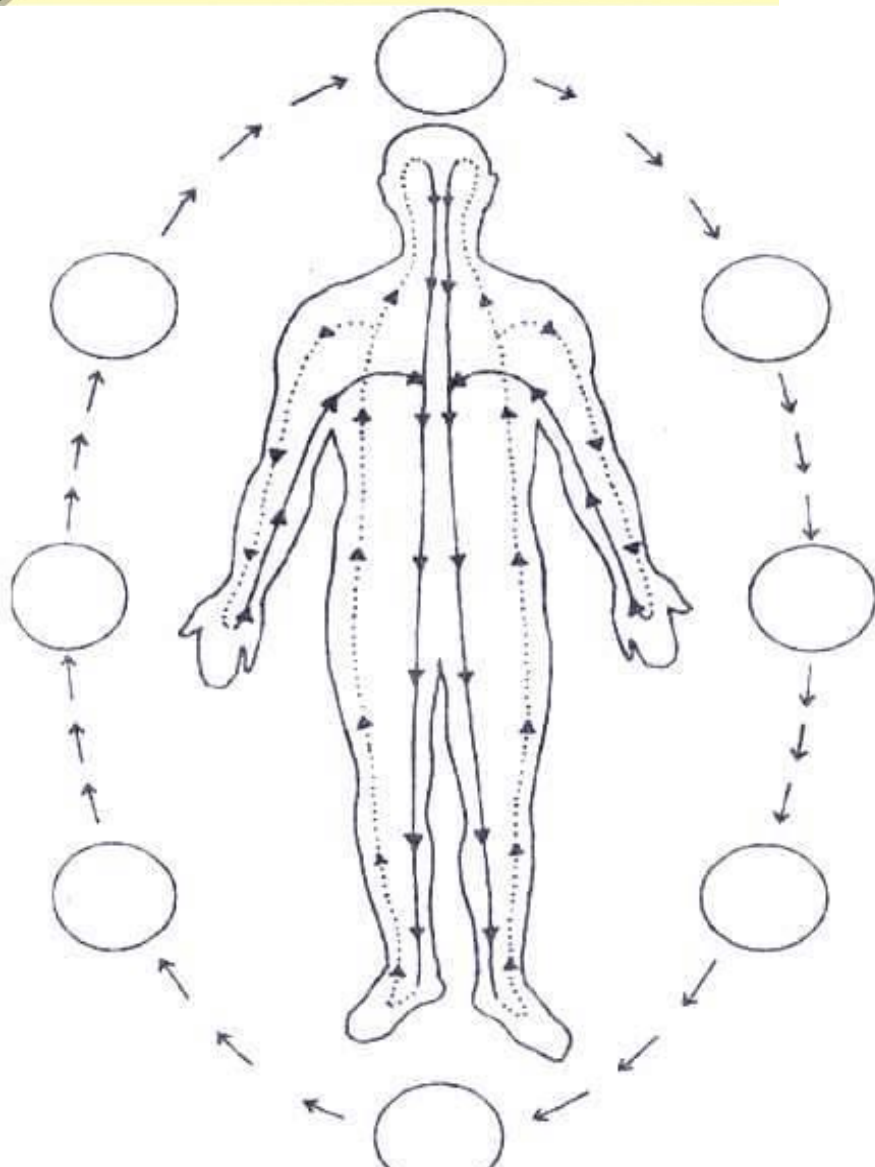
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



$\sin A = \sin B = \sin C$

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

$\sin 90^\circ = 1$

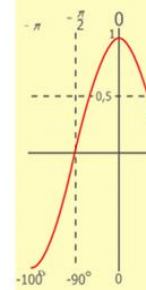
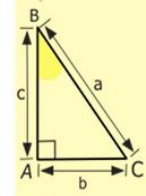


**Организм человека
тоже живет
циклически
по прошествии
определенного
периода
он делает круг и
возвращается в то
же самое состояние**

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

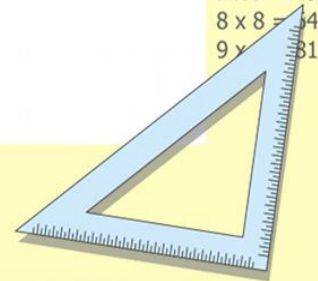
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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

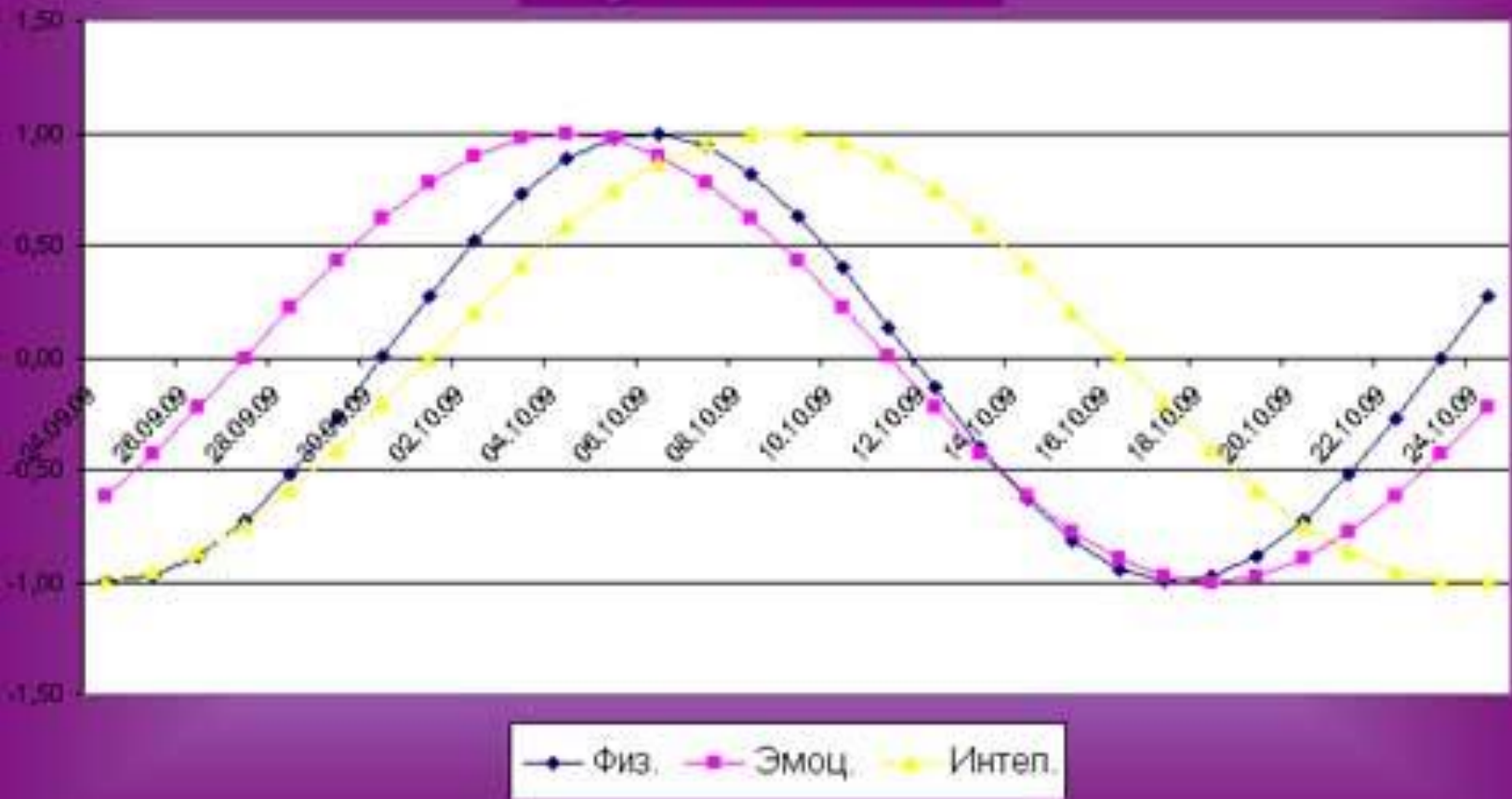


$y = \cos$

- 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



Биоритмы человека



Биоритмы рождаются вместе с человеком, одновременно стартуя, они оказывают влияние на наш жизненный путь – человек совершает те, или иные поступки с различной степенью успешности...

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

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

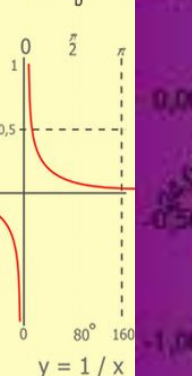
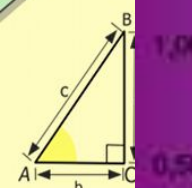
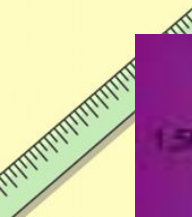
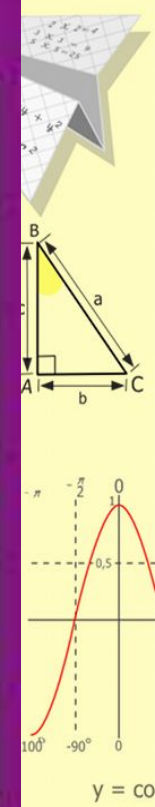
$$\sin 90^\circ = 1$$

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

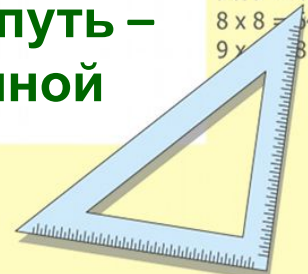
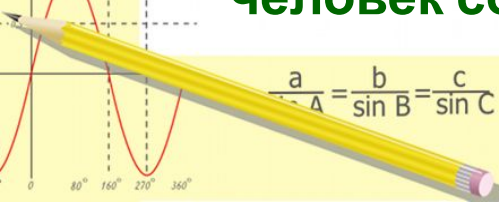
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

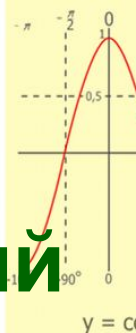
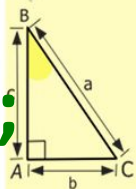
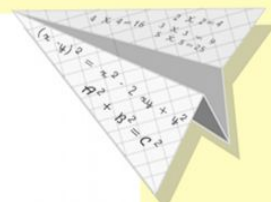
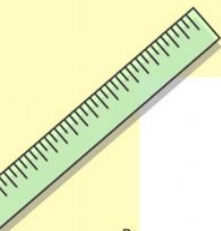
$$\frac{x}{70}$$

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



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



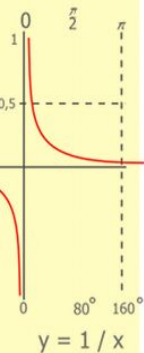
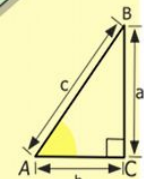


- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81

$R_{\phi}(x) = \sin[(2\pi x)/23]$ – физический цикл;

$R_{\text{э}}(x) = \sin[(2\pi x)/28]$ – эмоциональный цикл;

$R_{\text{и}}(x) = \sin[(2\pi x)/33]$ – интеллектуальный цикл.



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



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

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

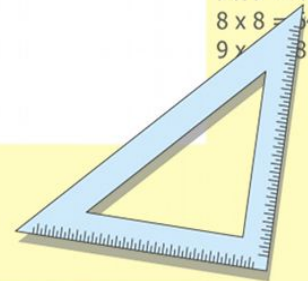
$$\sin 90^\circ = 1$$



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

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

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



Реши уравнения

I вариант

1) $\sin 4x = -1$;
2) $\cos^2 x - \sin^2 x = 0$

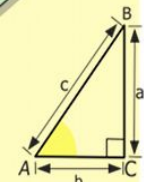
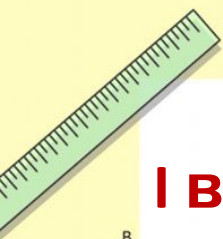
3) $2\sin 2x = \sqrt{3}$;

4) $2\cos 2x = -1$;

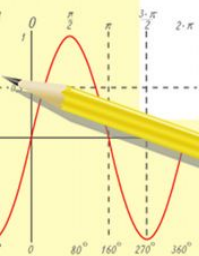
5) $\sin x \cdot \cos 2x + \cos x \cdot \sin 2x = -1/2$

II вариант

1) $\cos 3x = -1$;
2) $4\sin 2x \cdot \cos 2x = 0$



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



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

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

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

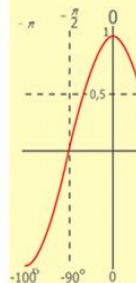
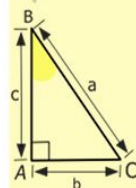
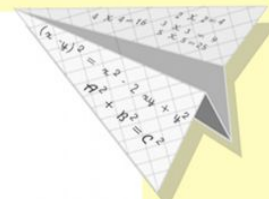


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

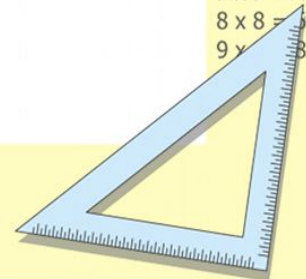
$$x = 70$$

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



$$y = \cos$$

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



$$6) 4\sin 2x \cdot \cos 2x = \sqrt{2}$$

укажите наибольшее отрицательное решение (в градусах).

$$7) 2 \cos x = -1$$

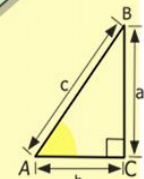
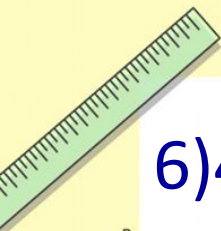
запишите решение уравнения (в градусах), принадлежащее $[90^\circ ; 180^\circ]$

$$6) 2 \cos 2x = 1$$

Укажите наименьшее положительное решение (в градусах).

$$7) 2 \sin x = -1$$

запишите решение уравнения (в градусах), принадлежащее $[180^\circ ; 270^\circ]$



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



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

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

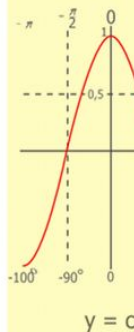
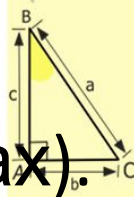
$$\sin 90^\circ = 1$$



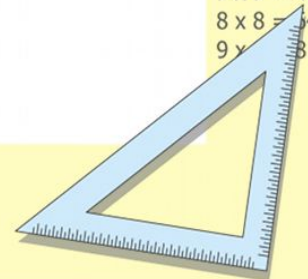
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

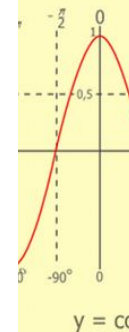
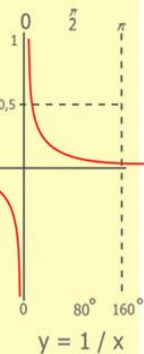
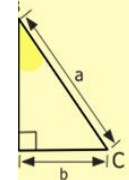
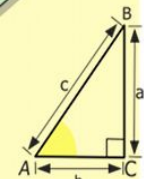
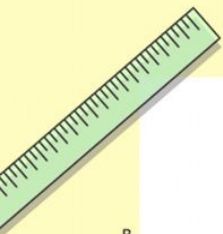
$$(x+y)(x-y) = x^2 - y^2$$



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



«Вдохновение необходимо в математике, как и в поэзии» А.С.Пушкин



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

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



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

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

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

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

$$x = 70$$

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

