$$a^2-b^2=(a-b)(a+b)$$
$$(a+b)^2=a^2+2ab+b^2$$
$$(a-b)^2=a^2-2ab+b^2$$
$$a^3+b^3=(a+b)(a^2-ab+b^2)$$
$$a^3-b^3=(a-b)(a^2+ab+b^2)$$
$$(a+b)^3=a^3+3a^2b+3ab^2+b^3$$
$$(a-b)^3=a^3-3a^2b+3ab^2-b^3$$

$$ax^2+bx+c=a(x-x_1)(x-x_2)$$

при $a=1$: $\begin{cases} x_1+x_2=-b \\ x_1\cdot x_2=c \end{cases}$

1 ц (центнер) = 100 кг

1 а (ар, сотка) = $100\ м^2$

1 га (гектар) = $10^4\ м^2$

$$\frac{1}{2}^{(3}+\frac{1}{3}^{(2}=\frac{3+2}{6}=\frac{5}{6}$$

$$\frac{2}{x}^{(x+1}-\frac{3}{x+1}^{(x}=\frac{2x+2-3x}{x\cdot(x+1)}=\frac{2-x}{x\cdot(x+1)}$$

$$2\cdot\widehat{(a+3)}=2a+2\cdot3=2a+6$$

Ар. ÷

$$a_n=a_1+d(n-1)$$
$$S_n=\frac{a_1+a_n}{2}\cdot n$$
$$a_n=\frac{a_{n+1}+a_{n-1}}{2}$$

Геом. ÷÷

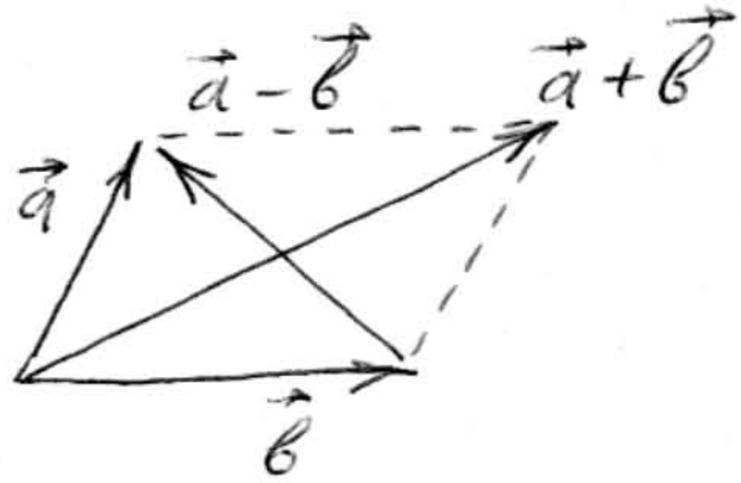
$$b_n=b_1\cdot q^{n-1},\quad q\neq0,\ b_1\neq0$$
$$S_n=\frac{b_1(1-q^n)}{1-q}$$
$$S=\frac{b_1}{1-q}\quad(|q|<1)$$
$$b_n=\sqrt{b_{n+1}\cdot b_{n-1}}$$

$$\vec{a}\cdot\vec{b}=|\vec{a}|\cdot|\vec{b}|\cdot\cos\varphi$$

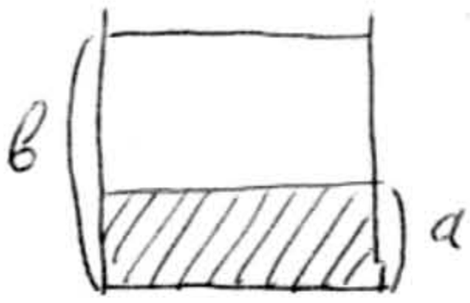
$\vec{a}=(2;3)$

$\vec{b}=(4;5)$

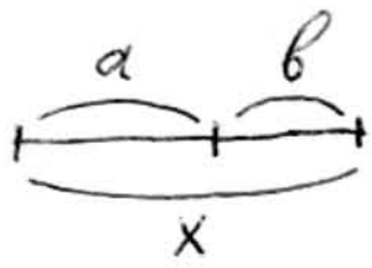
$$\vec{a}\cdot\vec{b}=2\cdot4+3\cdot5=23$$
$$\vec{a}+\vec{b}=(2+4;3+5)=(6;8)$$
$$3\vec{b}=(3\cdot4;3\cdot5)=(12;15)$$



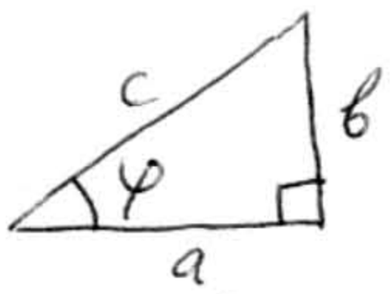
| | |
|---|---|
| ↑ на 3% | $k = 1{,}03$ |
| ↓ на 10% | $k = 0{,}90$ |




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




$$\frac{a}{x} + \frac{b}{x} = 1$$



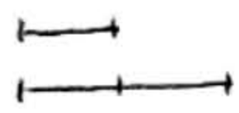

$$a^2 + b^2 = c^2$$

$$\sin\varphi = \frac{b}{c}$$

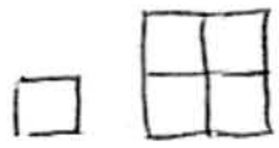
$$\cos\varphi = \frac{a}{c}$$

$$\operatorname{tg}\varphi = \frac{b}{a}$$

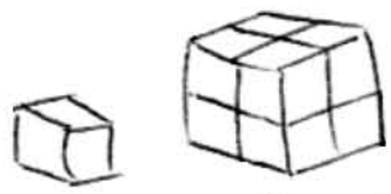
$$\operatorname{ctg}\varphi = \frac{a}{b}$$



$$l_2 = k \cdot l_1$$



$$S_2 = k^2 \cdot S_1$$



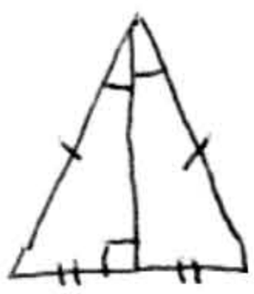
$$V_2 = k^3 \cdot V_1$$

(k - коэфф. подобия)

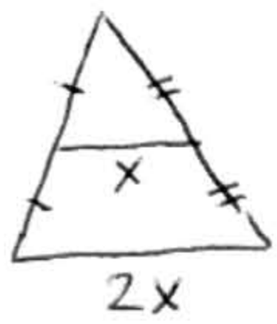
Неравенство △


$$\begin{cases} a + b > c \\ b + c > a \\ a + c > b \end{cases}$$

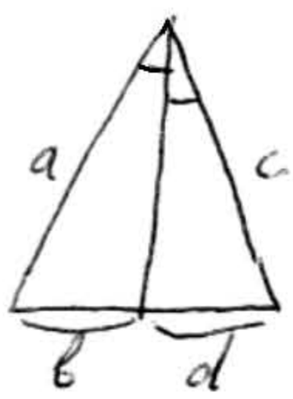
Равнобедр. △



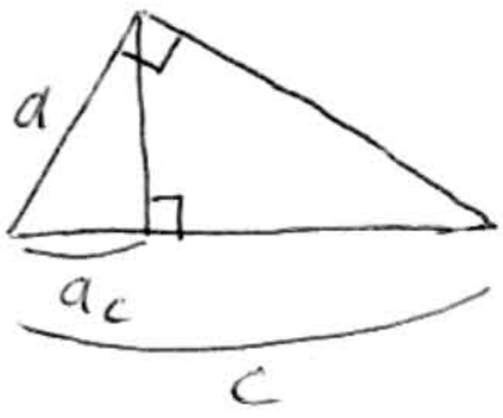
Ср. линия



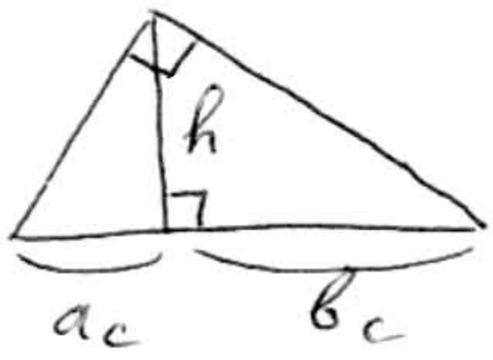

Св. бисс.




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

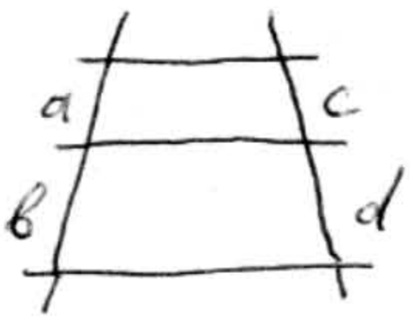



$$a^2 = a_c \cdot c$$



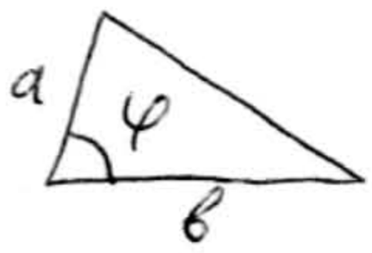

$$h^2 = a_c \cdot b_c$$

т. Фалеса

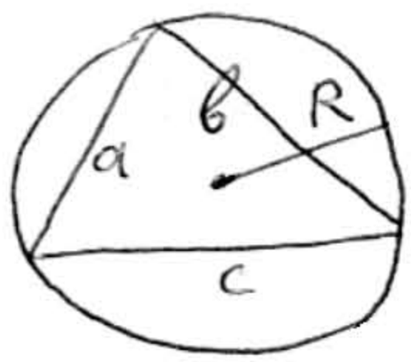



$$\frac{a}{b} = \frac{c}{d}$$


$$S = \frac{1}{2} a h$$




$$S = \frac{1}{2} ab \sin\varphi$$

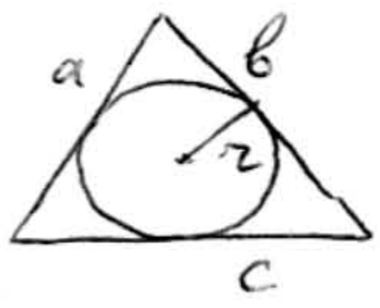



$$S = \frac{abc}{4R}$$

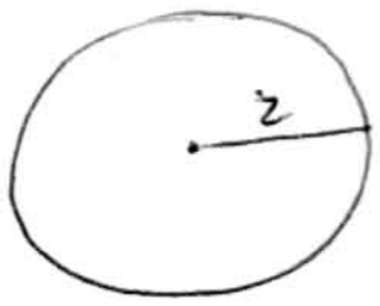
ф. Герона


$$S = \sqrt{p(p-a)(p-b)(p-c)}$$

$$p = \frac{a+b+c}{2}$$

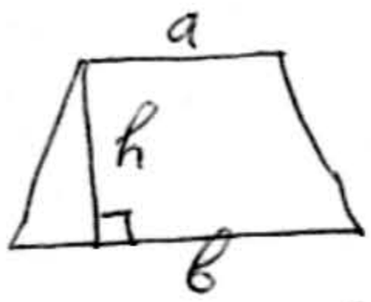



$$S = p r$$

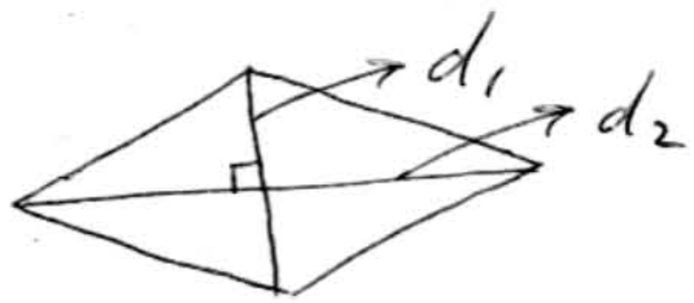



$$S = \pi r^2$$

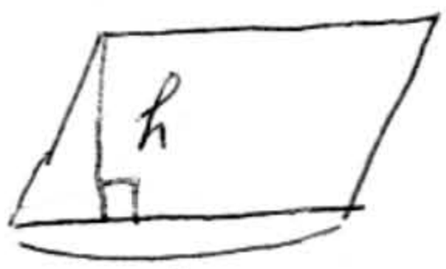
$$C = 2\pi r$$



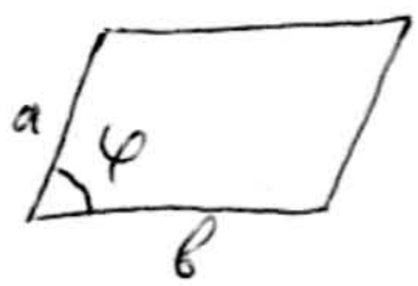

$$S = \frac{a+b}{2} \cdot h$$




$$S = \frac{1}{2} d_1 d_2$$

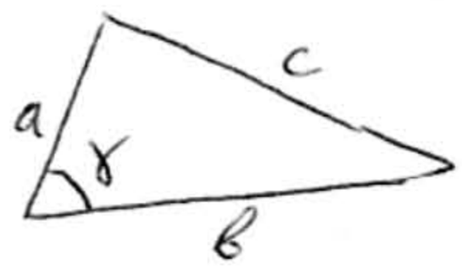



$$S = ah$$



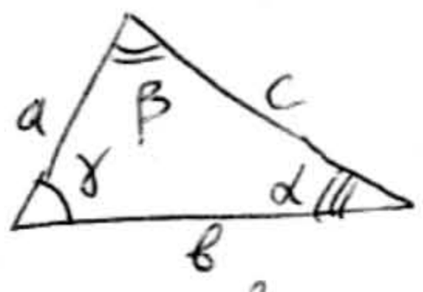

$$S = ab \sin\varphi$$

т. cos




$$c^2 = a^2 + b^2 - 2ab\cos\gamma$$

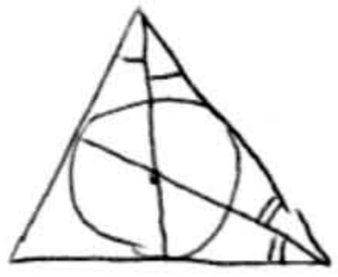
т. sin



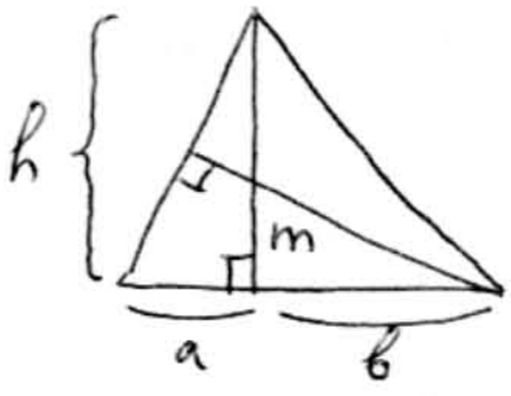

$$\frac{a}{\sin\alpha} = \frac{b}{\sin\beta} = \frac{c}{\sin\gamma} = 2R$$

медиана


бисс.

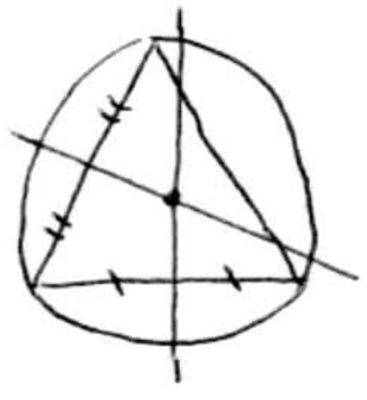


высота



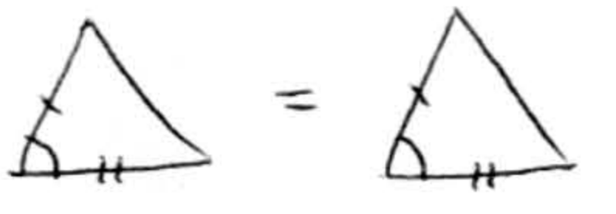

$ab = mh$

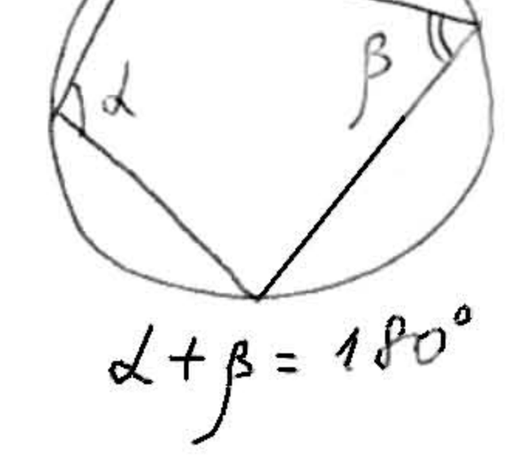
сер. перп.

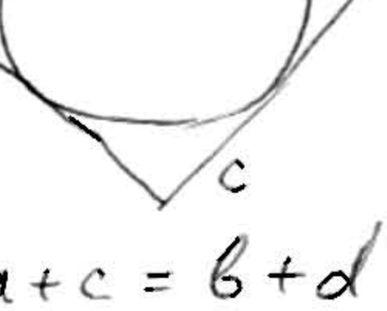


Подобие △

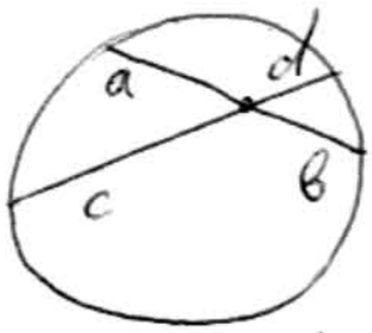
Равенство △



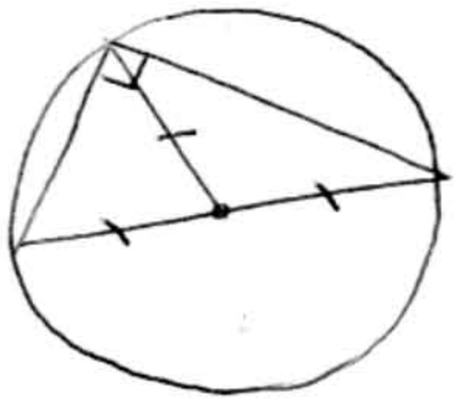







$ab = cd$



$S_n = (n-2) \cdot 180°$

$d = \frac{n}{2} \cdot (n-3)$




$\alpha + \beta = 180°$




$a + c = b + d$

$$a^{\log_a b} = b \quad \text{– осн. лог. т.}$$

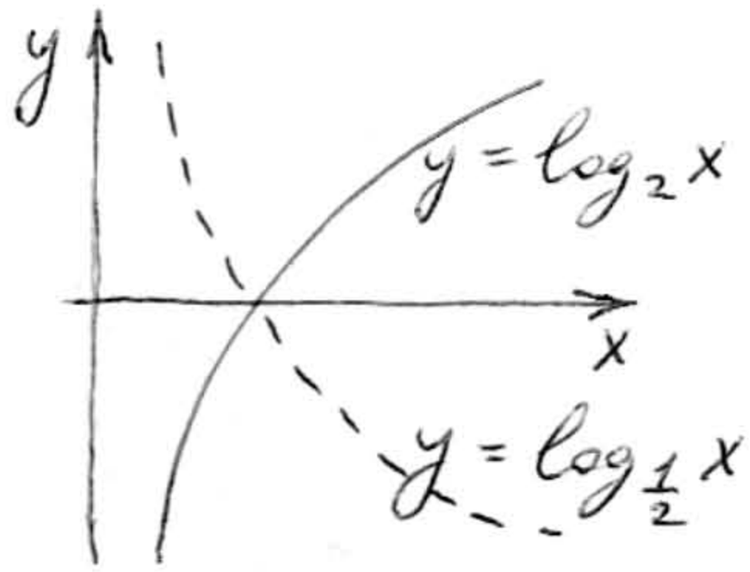
$$\log_a b + \log_a c = \log_a bc$$

$$\log_a b - \log_a c = \log_a \frac{b}{c}$$

$$\log_a b^k = k \cdot \log_a b$$

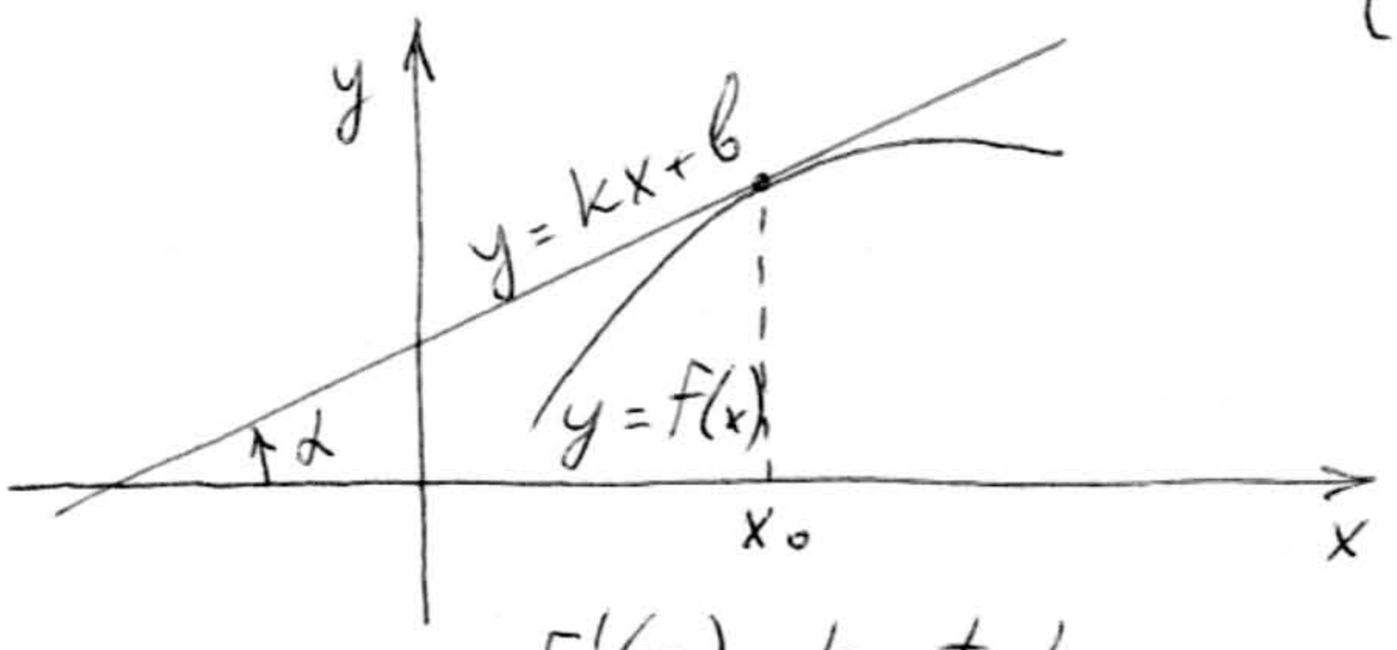
$$\log_{a^k} b = \frac{1}{k} \cdot \log_a b$$

$$\log_a b = \frac{\log_c b}{\log_c a}$$




$$y = \log_a x$$

$$\begin{cases} x > 0 \\ a > 0 \\ a \neq 1 \end{cases}$$




$$F'(x_0) = k = \operatorname{tg}\alpha$$

$$(x^p)' = p\,x^{p-1} \qquad (x)' = 1 \qquad (u \cdot v)' = u'v + uv'$$

$$(a^x)' = a^x \cdot \ln a \qquad (e^x)' = e \qquad \left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$$

$$(\log_a x)' = \frac{1}{x \cdot \ln a} \qquad (\ln x)' = \frac{1}{x} \qquad u'(v) = u' \cdot v'$$

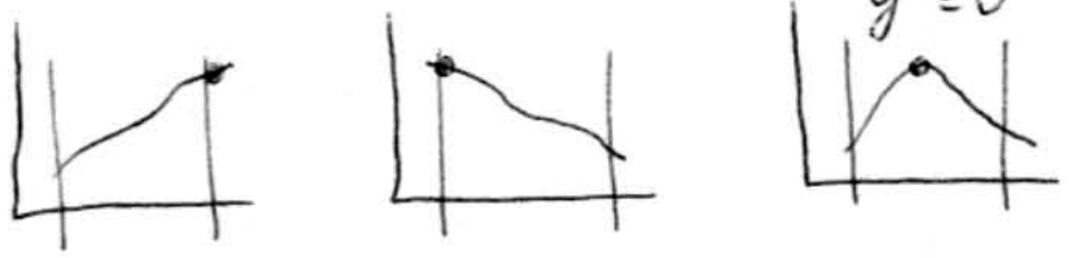
$$(\sin x)' = \cos x$$

$$(\cos x)' = -\sin x$$

$$(\operatorname{tg} x)' = \frac{1}{\cos^2 x}$$

$$(\operatorname{ctg} x)' = -\frac{1}{\sin^2 x}$$

Наиб.




Наим.

$$\int x^p dx = \frac{x^{p+1}}{p+1} + C$$

$$\int (kx+b)^p dx = \frac{(kx+b)^{p+1}}{k\cdot(p+1)} + C$$

$$\int \frac{dx}{x} = \ln|x| + C$$

$$\int \frac{dx}{kx+b} = \frac{1}{k}\cdot \ln|kx+b| + C$$

$$\int e^x dx = e^x + C$$

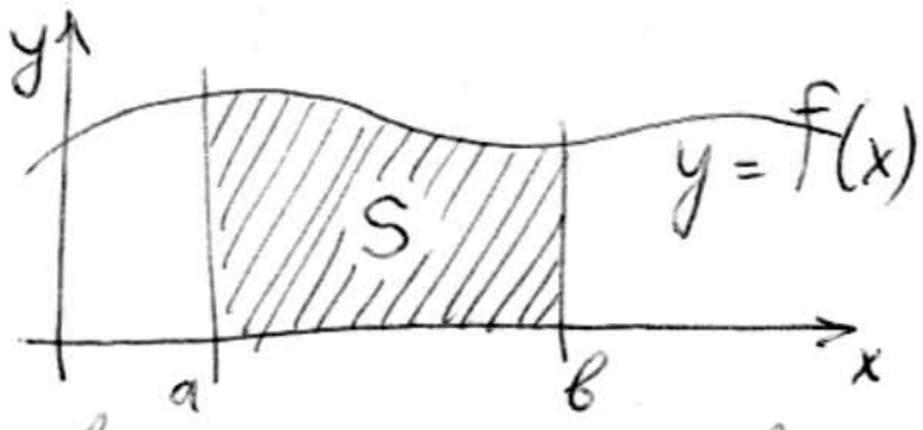
$$\int e^{kx+b} dx = \frac{1}{k} e^{kx+b} + C$$

$$\int \sin x\, dx = -\cos x + C$$

$$\int \sin(kx+b)\, dx = -\frac{1}{k}\cos(kx+b) + C$$

$$\int \cos x\, dx = \sin x + C$$

$$\int \cos(kx+b)\, dx = \frac{1}{k}\sin(kx+b) + C$$

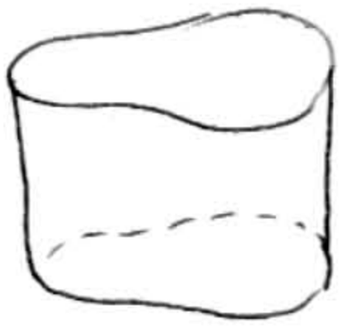



$$\int F(x)\,dx = F(x) + C$$

$$F'(x) = f(x)$$

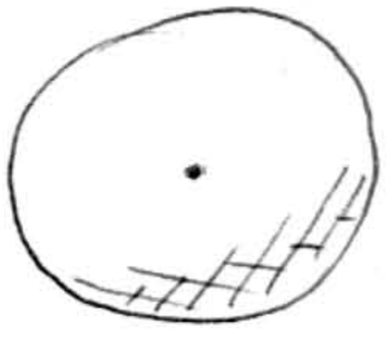
$$S = \int_a^в f(x)\,dx = F(x)\Big|_a^в = F(в) - F(a)$$


$$S_{бок.} = \pi r l$$



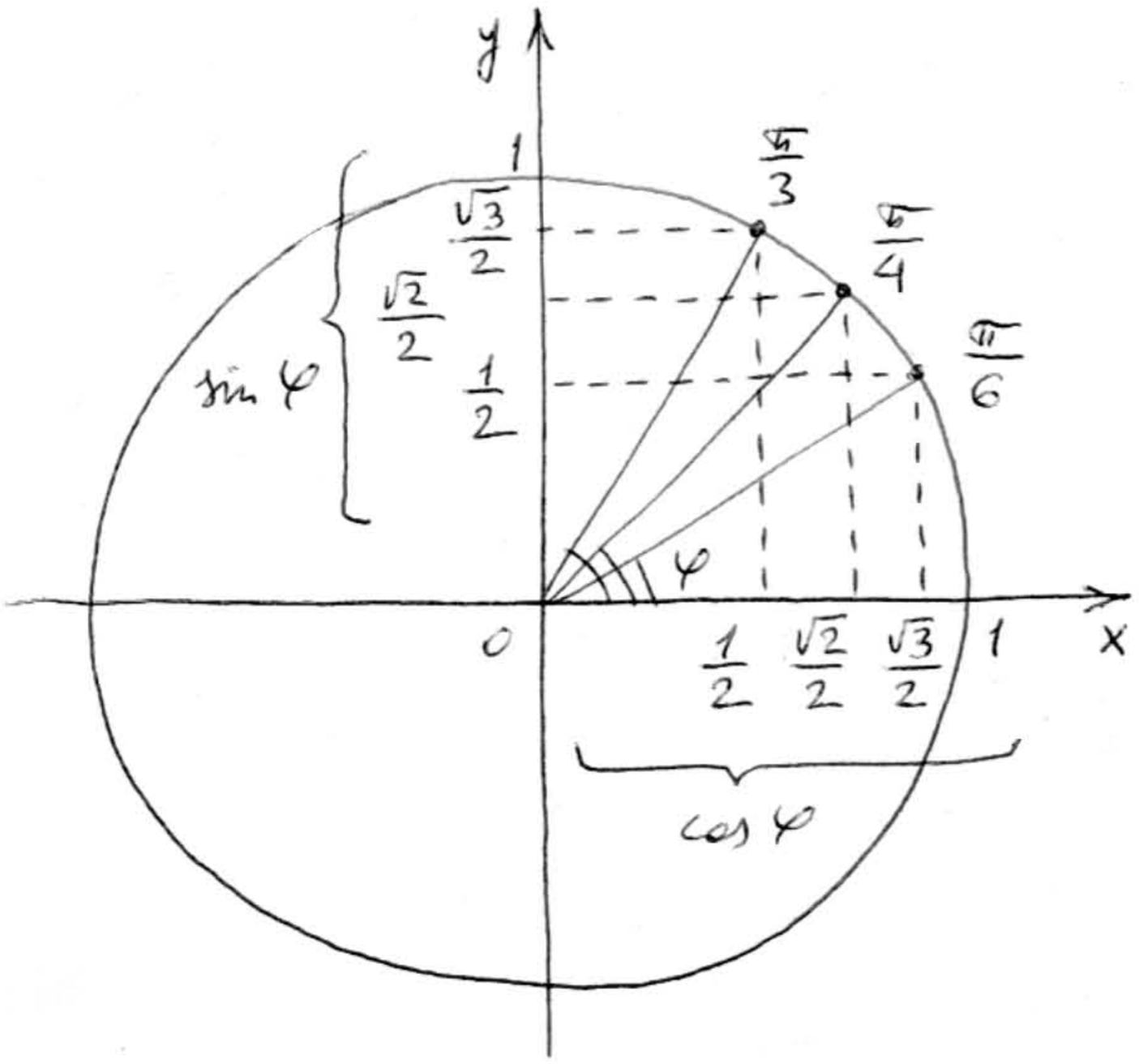
$$V = S_{осн}\cdot h$$

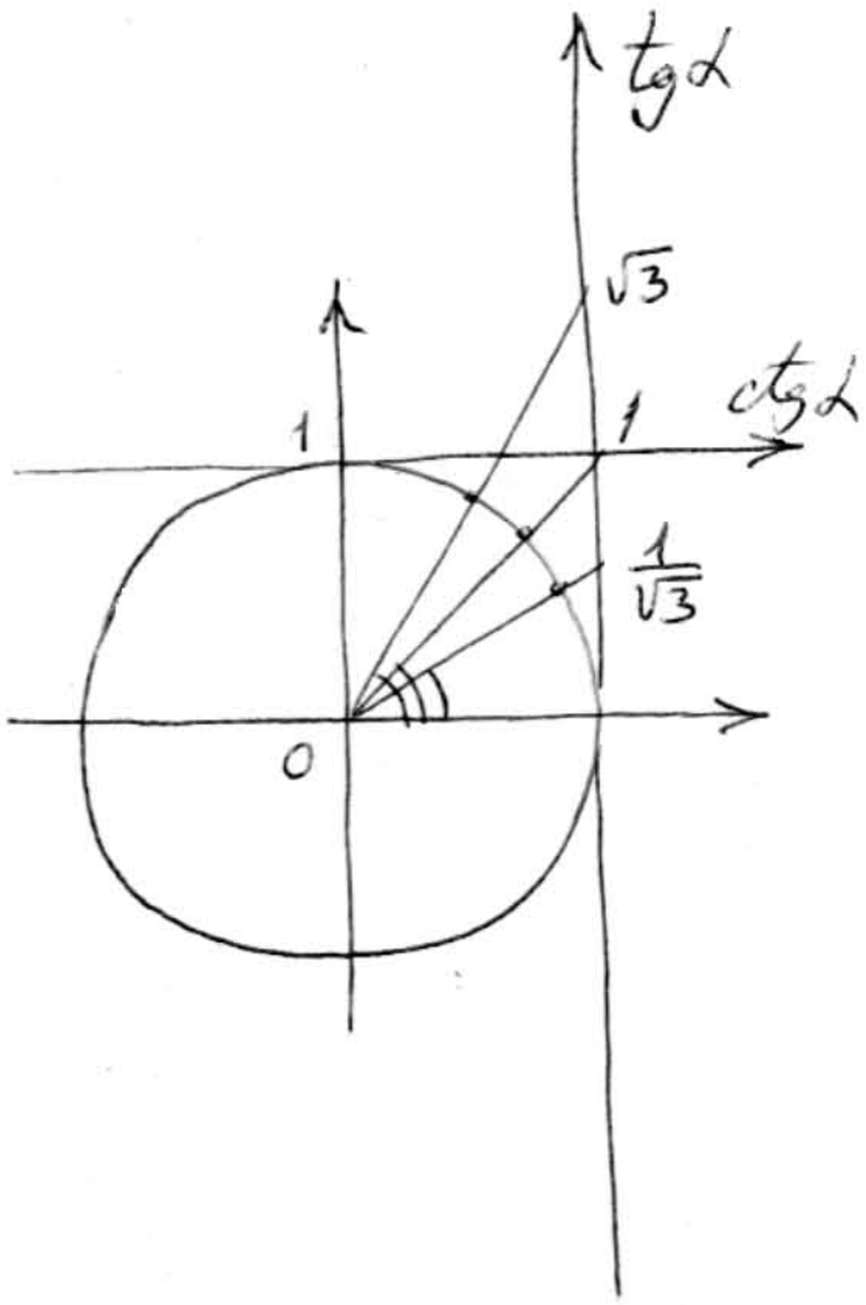
$$V = \frac{1}{3} S_{осн.}\cdot h$$



$$S = 4\pi R^2$$

$$V = \frac{4}{3}\pi R^3$$




$$\sin^2\alpha + \cos^2\alpha = 1$$

$$\sin 2\alpha = 2\sin\alpha\cos\alpha$$

$$\cos 2\alpha = \cos^2\alpha - \sin^2\alpha$$

$$\sin^2\alpha = \frac{1-\cos 2\alpha}{2}$$

$$\cos^2\alpha = \frac{1+\cos 2\alpha}{2}$$

$$\sin(\alpha+\beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$$

$$\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$$

$$\sin\alpha + \sin\beta = 2\sin\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$$

$$\sin\alpha - \sin\beta = 2\cos\frac{\alpha+\beta}{2}\sin\frac{\alpha-\beta}{2}$$

$$\cos\alpha + \cos\beta = 2\cos\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$$

$$\cos\alpha - \cos\beta = -2\sin\frac{\alpha+\beta}{2}\sin\frac{\alpha-\beta}{2}$$

| | |
|---|---|
| $\sin x = a$ | $x = (-1)^k \arcsin a + \pi k$ |
| $\cos x = a$ | $x = \pm \arccos a + 2\pi k$ |
| $\operatorname{tg} x = a$ | $x = \operatorname{arctg} a + \pi k$ |
| $\operatorname{ctg} x = a$ | $x = \operatorname{arcctg} a + \pi k,\ k \in Z$ |