

I) ( )

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« »:  $|4|=4$ ,  $|-4|=4$ ,  $|0|=0$ ,  $|\frac{10}{3}|=\frac{10}{3}$ ,  $|-2,5|=2,5$  . . .

$x$  :  $|x| \geq 0$ .

( )

$|-4|=|4|=4$  . . .  $-4$   $4$  . . .

$|x| = \alpha$  :  $x_1 = -\alpha$ ,  $x_2 = \alpha$  (  $\alpha = 0$ , ) .

$|x| < \alpha$   $-\alpha < x < \alpha$  .

$|x| > \alpha$   $\begin{cases} x < -\alpha \\ x > \alpha \end{cases}$  ,

« »  $-\alpha$ ,  $\alpha$  .

$|x| \leq \alpha$ ,  $|x| \geq \alpha$  .

## II)

1)

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

2)

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

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

3)

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

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

4)

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

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

III)

$$ax^2 + bx + c = 0, a \neq 0$$

$$D = b^2 - 4ac$$

1)  $D > 0,$

$$x_1 = \frac{-b + \sqrt{D}}{2a}, x_2 = \frac{-b - \sqrt{D}}{2a}$$

2)  $D = 0,$

$$x_1 = x_2 = \frac{-b}{2a}$$

3)  $D < 0,$

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[http://mathprofi.ru/kompleksnye\\_chisla\\_dlya\\_chainikov.html](http://mathprofi.ru/kompleksnye_chisla_dlya_chainikov.html)

$$D = 36 \quad \sqrt{D} = \sqrt{16} = 4, \quad D = 17 -$$

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

IV)

1) $\frac{a}{b} \cdot c$ $\frac{a}{\frac{b}{c}} = \frac{a \cdot c}{b}$	2) $a \cdot \frac{b}{c}$ $\frac{a}{\frac{b}{c}} = \frac{a \cdot c}{b}$
3) $\frac{a}{b} \cdot \frac{c}{d}$ $\frac{a}{\frac{b}{\frac{c}{d}}} = \frac{a \cdot d}{b \cdot c}$	

V)

x.

$$\frac{1}{x^a} = x^{-a}$$

$$x^a \cdot x^b = x^{a+b},$$

$$(x^a)^b = x^{a \cdot b}$$

$$\frac{x^a}{x^b} = x^a \cdot x^{-b} = x^{a-b}$$

$$\sqrt[b]{x^a} = x^{\frac{a}{b}},$$

$$\frac{1}{\sqrt[7]{(x + \cos 3x)^4}} = \frac{1}{(x + \cos 3x)^{\frac{4}{7}}} = (x + \cos 3x)^{-\frac{4}{7}}$$

VI)

$$b = a^{\log_a b},$$

$$b = e^{\ln b}$$

$$\ln(ab) = \ln a + \ln b$$

$$\ln \frac{a}{b} = \ln a - \ln b$$

$$\ln b^a = a \ln b$$

$$\ln \sqrt[3]{\left(\frac{x-3}{2x+5}\right)^2} = \ln \left(\frac{x-3}{2x+5}\right)^{\frac{2}{3}} = \frac{2}{3} \ln \left(\frac{x-3}{2x+5}\right) = \frac{2}{3} (\ln(x-3) - \ln(2x+5))$$