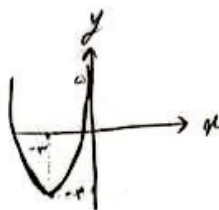


$$y = x^2 + 4x + 5$$

$$\text{مثلاً} \left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{2} = -2 = x \end{array} \right.$$

$$\begin{array}{l} (-2)^2 + 4(-2) + 5 = -f = y \\ 4 - 8 + 5 \end{array}$$

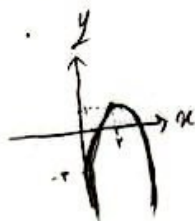


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$$y = -x^2 + 4x - 3$$

$$\text{مثلاً} \left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{-2} = 2 = x \end{array} \right.$$

$$\begin{array}{l} -2^2 + 4(2) - 3 = 1 = y \\ -4 + 8 - 3 \end{array}$$



در نقاط ادا محور x را قطع می کند.

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$$\frac{ax^2 - bx + c}{a} = 0$$

$$۱) \Delta = b^2 - 4ac > 0 \rightarrow 9 - 4a > 0 \rightarrow 9 > 4a \Rightarrow \frac{9}{4} > a$$

$$۲) \Delta = 0 / \Delta = b^2 - 4ac \rightarrow \Delta = 9 - 4a = 0 \rightarrow 4a = 9 \Rightarrow a = \frac{9}{4}$$

$$۳) \Delta < 0 \rightarrow \Delta = 9 - 4a < 0 \rightarrow 9 < 4a \Rightarrow \frac{9}{4} < a$$

$$۴) \Delta = 0 \rightarrow \frac{9}{4} = a$$

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$$۱) x^2 - 2x - 1 = 0$$

$$x^2 - 2x = 1$$

$$x^2 - 2x + 1 = 1 + 1$$

$$(x - 1)^2 = 2$$

$$x - 1 = \pm \sqrt{2}$$

$$x = 1 \pm \sqrt{2}$$

$$۲) x^2 - x - 1 = 0 \quad \left\{ \left(-\frac{1}{x}\right)^2 = \frac{1}{x^2} \right.$$

$$x^2 - x = 1$$

$$x^2 - x + \frac{1}{x^2} = 1 + \frac{1}{x^2}$$

$$\left(x - \frac{1}{x}\right)^2 = \frac{5}{x^2}$$

$$x - \frac{1}{x} = \pm \sqrt{\frac{5}{x^2}} = \pm \frac{\sqrt{5}}{x}$$

$$x = \frac{1 \pm \sqrt{5}}{2}$$

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$$\frac{x^2}{a} - \frac{2x}{b} - \frac{1}{c} = 0$$

$$\Delta = b^2 - 4ac = (-2)^2 - 4(1)(-1) = 4 + 4 = 8$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = \frac{2 \pm \sqrt{8}}{2} = \frac{2 \pm 2\sqrt{2}}{2} = 1 \pm \sqrt{2}$$

$$x = \frac{2 \pm \sqrt{8}}{2}$$

$$x = \frac{2 - \sqrt{8}}{2} = 1 - \sqrt{2}$$

$$\frac{x^2}{a} + \frac{x}{b} - \frac{1}{c} = 0$$

$$\Delta = b^2 - 4ac = 1 - 4(1)(-1) = 1 + 4 = 5$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = \frac{-1 \pm \sqrt{5}}{2}$$

$$x = \frac{-1 \pm \sqrt{5}}{2}$$

$$x = \frac{-1 + \sqrt{5}}{2}$$

$$x = \frac{-1 - \sqrt{5}}{2}$$

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$$x^2 - 11x + 21 = 0$$

$$\frac{(x-f)(x-v)}{x=f \quad x=v} = 0$$

$$x^2 + 2x - 21 = 0$$

$$\frac{(x+v)(x-f)}{x=-v \quad x=f}$$

$$\Delta x^2 - 12x + v = 0$$

$$x^2 - 12x + 2\Delta = 0$$

$$\frac{(x-\Delta)(x-v)}{x=\Delta \quad x=v}$$

$$x = \frac{\Delta}{\Delta} = 1$$

$$x = \frac{v}{\Delta} = 1.5$$

$$x^2 - 10x + v = 0$$

$$x^2 - 10x + 21 = 0$$

$$\frac{(x-f)(x-v)}{x=f \quad x=v}$$

$$x = \frac{f}{f} = 1$$

$$x = \frac{v}{f} = 2.1$$

$$1) x^2 - \Delta x + 2 = 0 \rightarrow x = 1$$

$$\rightarrow x = \frac{f}{f}$$

$$2) x^2 + \Delta x + 2 = 0 \rightarrow x = -1$$

$$\rightarrow x = -\frac{f}{f}$$

$$3) x^2 - \Delta x + 1$$

$$\Delta = b^2 - 4ac = 4\Delta - 4(1 \times 1) = 16$$

$$x = \frac{+\Delta \pm \sqrt{16}}{f}$$

$$f) x^2 + vx + 9 = 0$$

$$\Delta = b^2 - 4ac = f^2 - 4(f \times 9) = f^2 - 36f = -9\Delta < 0 \rightarrow \text{no real roots}$$

$$x^2 - 2x - 2 = 0$$

$$\Delta = 9 + 1 = 10 > 0$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x_1 = \frac{+2 + \sqrt{10}}{2}$$

$$x_2 = \frac{2 - \sqrt{10}}{2}$$

$$1) s^2 - 2p = 9 - 2\left(\frac{-2}{+2}\right) = 13$$

$$2) s^2 - 2sp = 2v - 2\left(\frac{2}{2} \times \frac{2}{2}\right) = 2v + 1 = f\Delta$$

$$P = x_1 \times x_2 = \frac{2+\sqrt{10}}{2} \times \frac{2-\sqrt{10}}{2} = \frac{4-10}{4} = -\frac{3}{2} = -\frac{2}{5} = \frac{2+\sqrt{10}}{2} + \frac{2-\sqrt{10}}{2} = \frac{4}{2} = 2$$

$$\begin{pmatrix} v \\ \Delta \end{pmatrix} + \begin{pmatrix} 9 \\ 2 \end{pmatrix} = 21 + 22 = 43$$

$$\frac{2! \times 2! \times 2!}{2! \times 2!} = 21$$

$$\frac{2! \times 2! \times 2!}{2! \times 2!} = 22$$

$$\begin{pmatrix} 9 \\ 2 \end{pmatrix} + \begin{pmatrix} 1 \\ 2 \end{pmatrix} = 11 + 22 = 33$$

$$\frac{2! \times 2! \times 2!}{2! \times 2!} = 11$$

$$\frac{2! \times 2! \times 2!}{2! \times 2!} = 22$$