

$$x^2 - 4x + 1 = 0 \Rightarrow (x-2)^2 = 0 \rightarrow x=2$$

$$x^2 - 2ab + b^2 = (a-b)^2 \rightarrow (a-b)^2$$

$$x^2 + 12x + 17 = 0 \xrightarrow{+9} x^2 + 12x + 17 + 9 = 9$$

$$\downarrow$$

$$17-9=8$$

$$(x+6)^2 = 9 \rightarrow x+6 = \pm 3 \rightarrow x = -6 \pm 3 \Rightarrow x = -3, x = -9$$

$$x^2 - 5x + 6 = 0$$

$$\rightarrow -4, -1 \Rightarrow (x-2)(x-3) = 0 \rightarrow x=2, x=3$$

$$x^2 - 5x - 14 = 0 \rightarrow -7, +2 \Rightarrow (x+2)(x-7) = 0 \rightarrow x=-2, x=7$$

$$x^2 - 4x - 5 = 0 \rightarrow x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-4 \pm \sqrt{16 + 20}}{2} = \frac{-4 \pm \sqrt{36}}{2} = \frac{-4 \pm 6}{2} \Rightarrow x = 1, x = -5$$

$$x^2 - 5x + \frac{1}{4} = 0 \rightarrow x = \frac{5 \pm \sqrt{25 - 1}}{2} = \frac{5 \pm \sqrt{24}}{2} = \frac{5 \pm 2\sqrt{6}}{2} \Rightarrow x = \frac{5 + 2\sqrt{6}}{2}, x = \frac{5 - 2\sqrt{6}}{2}$$

$$x^2 - 3x + 2 = 0 \rightarrow a+b+c=0 \rightarrow x=1, x=2$$

$$x^2 + x - 2 = 0 \rightarrow a+c=b \rightarrow x=-1, x=2$$

$$x^2 - 12x + 17 = 0$$

$$x^2 - 12x + 36 = 0$$

$$(x-6)^2 = 0 \Rightarrow x=6$$

$$x^2 - 10x + 17 = 0$$

$$x^2 - 10x + 25 = 0$$

$$(x-5)^2 = 0 \Rightarrow x=5$$

$$x^2 + \omega x - 1 = 0 \quad x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-\omega \pm \sqrt{\omega^2 - 4}}{-2} = \frac{-\omega \pm \sqrt{13}}{-2}, \quad \frac{-\omega + \sqrt{13}}{-2}$$

$$x^2 = x + 1 = 0 \quad \frac{1 \pm \sqrt{1-4}}{2} \Rightarrow \text{حساب ندارد} \rightarrow \text{حساب ندارد}$$

$$x^2 - 5x + 4 = 0 \quad \frac{5 \pm \sqrt{25-16}}{2} = 1 \rightarrow \text{حساب دارد}$$

$$x^2 - x + 1 = 0 \quad \frac{1 \pm \sqrt{1-4}}{2} \Rightarrow \text{حساب ندارد} \rightarrow \text{حساب ندارد}$$

$$b^2 - 4ac < 0 \rightarrow 9 - 16a < 0 \quad \Delta < 0 \quad \frac{9}{16} < \frac{1}{a} \rightarrow a > \frac{9}{16}$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{3 \pm \sqrt{9 - 16a}}{2}$$

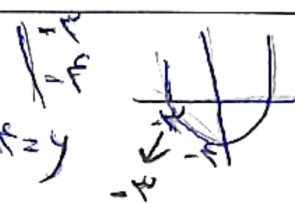
$$\Delta < 0 \quad 9 - 16a < 0 \quad a > \frac{9}{16}$$

$$a > \frac{9}{16} \quad \frac{9}{16} > a \quad 0 = \Delta < 0 \quad a = \frac{9}{16}$$

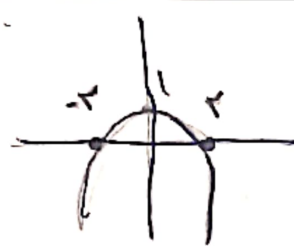
$$b^2 - 4ac > 0 \rightarrow 9 - 16a > 0 \quad \Delta > 0 \quad a < \frac{9}{16}$$

$$b^2 - 4ac = 0 \rightarrow 9 - 16a = 0 \rightarrow 9 = 16a \quad a = \frac{9}{16}$$

$$y = x^2 + 4x + \omega \quad \frac{-b}{2a} = \text{دست} \quad \frac{-4}{2} = -2 \quad \text{min}$$



$$y = -x^2 + 4x - 3 \quad y = -(x-2)^2 + 1 = 1 = y \quad x = \frac{4}{2} = 2$$



$$x \in (-2, 2)$$

$$S = \frac{-b}{a} \rightarrow \left(\frac{-b}{a}\right)^2 = \left(2\left(\frac{c}{a}\right)\right) \rightarrow 9 + 4 = 13 \quad \left(\frac{c}{a}\right)^2 = 9 \quad \frac{c}{a} = \pm 3$$

$$x^2 - 4x - 5 = 0$$

$$\left(\frac{-b}{a}\right)^2 = 4\left(\frac{c}{a}\right) \Rightarrow \sqrt{4+16} = 4 \quad -4 = 16$$