

$$y = a(x-h)^2 + k$$

$$y = a(x+1)^2 + 9$$

$$(3, 1)$$

$$1 = a(3+1)^2 + 9$$

$$1 = 16a + 9$$

$$-1 = 16a \quad a = -\frac{1}{16}$$

$$y = -\frac{1}{16}(x+1)^2 + 9$$

$$y = -\frac{1}{16}(x^2 + 2x + 1) + 9$$

$$y = -\frac{1}{16}x^2 - x - \frac{1}{16} + 9$$

$$y = -\frac{1}{16}x^2 - x + \frac{15}{16} \quad \checkmark$$

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$$\delta = -\frac{b}{a} = -\frac{m}{1} > 0 \Rightarrow m < 0$$

$$p = \frac{c}{a} = \frac{m+6}{1} > 0 \Rightarrow m > -6$$

$$\Delta = b^2 - 4ac$$

$$m^2 - 4(1)(m+6) = m^2 - 4m - 24 > 0$$

$$(m-12)(m+4) > 0$$

$$m > 12 \text{ یا } m < -4$$

$$-6 < m < -4$$

$$(-6, -4) \quad \checkmark$$

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$$\alpha + \beta = \frac{1}{\alpha\beta} \Rightarrow \frac{-(2m-1)}{1} = \frac{1}{1-m} \Rightarrow -4m + 2m^2 + 1 - m = 1 + 2m^2 - 1 - m - 1 = 0$$

$$m = \frac{1}{2}$$

$$m = -1$$

$$+ 0 \pm \frac{\sqrt{4m^2 - 4(1)(-1)}}{1} = \frac{1}{2} \quad \checkmark$$

$$\Delta > 0 \quad (2m-1)^2 - 4(1-m) > 0 \quad \checkmark$$

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

$$\delta = 1$$

$$p = -1$$

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

$$4x^2 - 4x - 4 = 0 \quad \checkmark$$

$$\alpha + \beta = (x_1 + x_2)^2 - 2x_1x_2(x_1 + x_2) + \frac{x_1 + x_2}{x_1x_2}$$

$$= 1^2 - 2(-1)(1) + \frac{1}{1} = \frac{6}{1}$$

$$\alpha\beta = (x_1x_2)^2 + (x_1 + x_2)^2 - 2x_1x_2 + \frac{1}{x_1x_2}$$

$$= -5 + 1 + 1 - \frac{1}{1} = -\frac{4}{1}$$

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

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

$$x^2 - 2x - 1 = 0$$

$$x_1 + x_2 = -\frac{b}{a} = -(-2) = 2 \quad \checkmark$$

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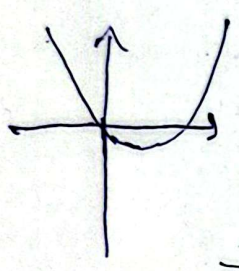
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$$\alpha = 3\beta$$

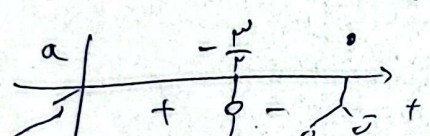
$$\alpha\beta = \frac{14}{3} \Rightarrow 3\beta^2 = \frac{14}{3} \Rightarrow \beta^2 = \frac{14}{9} \Rightarrow \begin{cases} \beta = \frac{\sqrt{14}}{3} \Rightarrow \alpha = \sqrt{14} \Rightarrow \alpha + \beta = \frac{4\sqrt{14}}{3} \\ \beta = -\frac{\sqrt{14}}{3} \Rightarrow \alpha = -\sqrt{14} \Rightarrow \alpha + \beta = -\frac{4\sqrt{14}}{3} \end{cases}$$

$$\alpha + \beta = \frac{\alpha}{3} \Rightarrow \alpha = 3(\alpha + \beta) = \pm 18 \Rightarrow |\alpha_1 - \alpha_2| = 36 \checkmark$$

$\Delta > 0 \Rightarrow a > 0$



$$\Delta > 0 \Rightarrow x = -\frac{2a+3}{a} > 0 \Rightarrow -\frac{3}{a} < 0 \Rightarrow a < 0$$

$$\Delta > 0 \Rightarrow -\frac{3+2a}{a} > 0 \Rightarrow \frac{3+2a}{a} < 0$$


الحیث مقدار $\checkmark$

$$\frac{1}{-1} = \frac{-a}{1} \Rightarrow a = 1$$

$$y = x^2 + 2x - 1 = 1 \Rightarrow x^2 + 2x - 2 = 0$$

$$(x+3)(x-1) = 0 \Rightarrow \begin{cases} x = 1 \\ x = -3 \end{cases}$$

$$y = -(x-1)(x+3) + 1 = -x^2 + 2x + 4 \Rightarrow b = 4$$

$$a \times b = 1 \times 4 = 4 \checkmark$$

$$\alpha + \beta = \alpha' + \beta' + 1 \Rightarrow \frac{\alpha}{\beta} = \frac{\alpha'}{\beta'} + 1 = \frac{1}{2} \Rightarrow \alpha = 1$$

$$\Rightarrow 2x^2 + x - 6 = 0 \Rightarrow \alpha', \beta' = -2, \frac{3}{2} \Rightarrow \alpha, \beta = -\frac{3}{2}, 2 \Rightarrow \frac{b}{2}$$

$$\alpha\beta = -3 \Rightarrow b = -6$$

$$\left[\frac{ab}{4} \right] = \left[\frac{-6}{4} \right] = \left[-\frac{3}{2} \right] \checkmark$$

$$x^2 + 2x + m = 0 \Rightarrow \begin{cases} \alpha \\ \beta \end{cases} \Rightarrow \delta = \alpha + \beta = -2$$

$$x^2 + 2x - 3m = 0 \Rightarrow \begin{cases} \alpha' \\ \beta' \end{cases} \Rightarrow \delta' = \alpha' + \beta' = -2$$

$$\delta = \alpha + \beta = -2$$

$$\delta' = \alpha' + \beta' = -2$$

$$\delta - \delta' = 0$$

$$\delta = -2$$

$$\delta' = -2$$

$$\delta - \delta' = 0$$