

1. حل

1. حل

20

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

$$\alpha + \beta = 0 \rightarrow \alpha = -\beta$$

1

$$x \rightarrow \beta^2 - 2\beta + 1 = 0 \rightarrow \beta^2 - 2\beta + 1 = 0$$

$$\beta^2 \rightarrow (\alpha\beta - 1)\beta \rightarrow \alpha\beta^2 - \beta \rightarrow \alpha(\alpha\beta - 1) - \beta \Rightarrow \alpha^2\beta - \alpha - \beta \Rightarrow \alpha^2\beta - 1 - \beta = 0$$

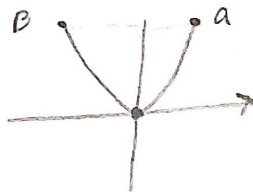
$$\beta^2 \rightarrow (\alpha\beta - 1)(\beta) \Rightarrow \alpha\beta^2 - \beta \rightarrow \alpha^2(\alpha\beta - 1) - \beta \Rightarrow 1(\alpha\beta - 1) - \beta \Rightarrow 1(\alpha\beta - 1) - \beta = 0$$

$$\beta^2 \rightarrow (1(\alpha\beta - 1))(\beta) \Rightarrow 1(\alpha\beta^2 - \beta) \Rightarrow 1(\alpha^2\beta - \alpha - \beta) \Rightarrow 1(\alpha^2\beta - 1 - \beta) = 0$$

$$\frac{\alpha + \beta}{\alpha\beta} \Rightarrow \frac{1 - 1 + 1}{1 \cdot 1} \Rightarrow \frac{1}{1} \Rightarrow 1$$

2

$$A(-1, 0, -1) B(1, -1) \Rightarrow$$



$$x = \frac{-1 \pm \sqrt{1+1}}{1} = 0 \text{ or } -1$$

$$\frac{\alpha + \beta}{1} = 0 \text{ or } -1 \rightarrow \alpha + \beta = 0 \text{ or } -1$$

3

$$x^2 + 14x + 49 = 0 \rightarrow (x+7)^2 = 0 \Rightarrow x = -7$$

$$\left[\frac{1}{1} \right] \rightarrow \left[\frac{1}{1} \right] \Rightarrow 1$$

$$K^2 - 14K + 49 = 0$$

$$(K-7)^2 = 0 \Rightarrow K = 7$$

$$K(K-7) = 0$$

$$K(K-7) = 0$$

$$B(-5, 2) A(1, 2) \rightarrow$$

$$\alpha(x+1)^2 + 1 = 2$$

$$2 = \alpha x^2 + 2\alpha x + \alpha + 1$$

$$\alpha^2 - 2\alpha = 1 - 2 \left(\frac{\alpha+1}{\alpha} \right) = 0$$

$$2\alpha + 2 = -\alpha \rightarrow \alpha = -\frac{4}{3}$$

$$\alpha^2 = 0 \Rightarrow -\frac{4}{3} + 1 = -\frac{1}{3}$$

4

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

$$\alpha + \beta = 2 \rightarrow \alpha + \beta = 2 < 9 \checkmark$$

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

$$-\beta^2 + 2\beta + m = 0$$

$$\Delta = b^2 - 4ac = 4 + 4m \geq 0 \Rightarrow m \geq -1$$

$$\Delta \geq 0 \rightarrow 4 + 4m \geq 0$$

$$m \geq -1$$

$$m \geq -1$$

نقطة



$$\begin{bmatrix} -1 \\ -1 \\ -1 \\ -1 \end{bmatrix} \Rightarrow \begin{bmatrix} -1 \\ -1 \\ -1 \\ -1 \end{bmatrix}$$

$$0 + \sqrt{4 + 4m} < 9$$

$$\sqrt{4 + 4m} < 9$$

$$\sqrt{4 + 4m} < 9$$

$$4 + 4m < 81$$

$$4m < 77$$

$$m < 19.25$$

(4)

$$m x^2 - 12x + 5m - 1 = 0$$

$$m x^2 - 12x + 5m - 1 = 0$$

$$\Delta = \frac{b^2}{4a} = \frac{144}{4m} = \frac{36}{m} \rightarrow x = \frac{6}{m} \rightarrow m \times \frac{36}{m^2} - 12\left(\frac{6}{m}\right) + 5m - 1 = 0$$

$$\frac{36}{m} - \frac{72}{m} + 5m - 1 = 0$$

$$m^2 - 2m - 180 = 0$$

$$(m-18)(m+12) = 0 \rightarrow m = \frac{18}{0} = 18 \text{ (قبول)}$$

$$m = \frac{-12}{0}$$

ممنوع
ممنوع
 $\alpha = m \gamma$

$$\frac{36}{m} + 5m - 1 = 0 \rightarrow \frac{36}{m} + 5m = 1$$

$$-36 + 5m^2 - 2m = 0$$

درستی ندارد

$$\Delta = \frac{b^2}{4a} = \frac{144}{4m} = 9 \rightarrow x = 2$$

(5)

$$x^2 + r(a+1)x + ra - 1 \rightarrow a = \alpha \beta \Rightarrow \frac{ra-1}{1} \Rightarrow a^2 = ra - 1$$

$$a^2 - ra + 1 = 0$$

$$x^2 + rx + 1 \rightarrow \alpha \beta = 1 \rightarrow \text{در جواب}$$

ممنوع

$$a = 1 \rightarrow (a-1)^2 = 0 \rightarrow a = 1$$

(6)

$$x^2 - \sqrt{x} - 5 = 0 \rightarrow t^2 - \sqrt{t} - 5 = 0 \rightarrow p = \frac{c}{a} = -5 < 0$$

$$x^2 = t + 5 \Rightarrow x = \sqrt{t+5} \Rightarrow x_1 + x_2 = 0$$

$$x^2 = t + 5 \Rightarrow \text{قبول}$$

$$t^2 - \sqrt{t} - 5 = 0 \Rightarrow t = \frac{\sqrt{t} + 5}{1} \Rightarrow \Delta = 49 - 14\sqrt{49} = 49 = 1 \Rightarrow \frac{\sqrt{t} + \sqrt{49}}{2} = t = x \cdot p$$

$$p^2 = t^2 = \frac{49 + 49 + 14\sqrt{49}}{4} = \frac{98 + 7\sqrt{49}}{2} \Rightarrow 2p^2 - 4sp + 4s = \frac{98 + 7\sqrt{49}}{2}$$

(7)

$$y = kx^2 - 4x - 7 \rightarrow x = \frac{-b}{2a} = \frac{4}{2k} = \frac{2}{k}$$

$$y = -4x - 7 \rightarrow y = k\left(\frac{2}{k}\right)^2 - 4\left(\frac{2}{k}\right) - 7 = \frac{4}{k} - \frac{8}{k} - 7 = \frac{-4}{k} - 7$$

$$y = \frac{-4}{k} - 7$$

$$y = \frac{-4}{k}$$

$$k = 2 \rightarrow y = -2$$

$$y = -mx^2 + mx + 1$$

$$y = -m - 2$$

مقدار

(8)

$$\Rightarrow -mx^2 + mx + 1 = -m - 2$$

$$-mx^2 + mx + m + 2 + 1 = 0$$

$$-mx^2 + x(m+1)(m+1) = 0$$

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

$$\Rightarrow -1 < m < \frac{1}{5}$$

$$\Rightarrow \Delta < 0 \rightarrow b^2 - 4ac = (m+1)^2 - 4(m+1)(-m) = (m+1)(5m+1) < 0$$