

$$\textcircled{a} m^2 - 3m - 4 \rightarrow (m-15)(m+12) \rightarrow m = -12 \rightarrow m = \frac{-12}{\Delta} \times \rightarrow a < 0 \wedge \times$$

$$\xrightarrow{x} = -110 \rightarrow m = 15 \rightarrow m = 3 \quad \checkmark$$

$$y = 3x^2 - 12x + 12 \quad \text{مختصات} = \frac{-b}{2a} \rightarrow \frac{12}{4} = 3 \Rightarrow \boxed{x = 3}$$

$$\alpha, \alpha, \beta \xrightarrow{\text{نسبت مساوی}} \alpha^2 = \alpha\beta = \beta^2 = \frac{c}{a} = \frac{2a-1}{1} \rightarrow \alpha^2 = 2a-1 \rightarrow \alpha^2 - 2a + 1 = 0 \quad \checkmark$$

$$\rightarrow (\alpha-1)^2 = 0 \rightarrow \boxed{\alpha = 1}$$

$$x^2 - vx - 2 = 0 \xrightarrow{x^2 = t} t^2 - vt - 2 = 0 \quad \frac{v \pm \sqrt{v^2 + 8}}{2} \rightarrow t = \frac{v + \sqrt{49}}{2} \quad \checkmark$$

$$\rightarrow t = \frac{v - \sqrt{49}}{2} \quad \times \quad \text{کبر از منفرجه}$$

$$t = x^2 = \frac{v + \sqrt{49}}{2} \rightarrow x = \pm \sqrt{\frac{v + \sqrt{49}}{2}} \rightarrow \delta = 0$$

$$\rightarrow p = -\left(\frac{v + \sqrt{49}}{2}\right)$$

$$2p^2 - 3sp + 3s^2 = 2p^2 = 2 \frac{(v + \sqrt{49})^2}{4} = \frac{49 + 98 + 14\sqrt{49}}{2} = \frac{147 + 14\sqrt{49}}{2} = \boxed{49 + 7\sqrt{49}}$$

$$y = kx^2 - \varepsilon x - 4 \rightarrow \delta \left| \begin{array}{l} -\frac{b}{2a} \rightarrow \frac{v}{k} \\ -\frac{\Delta}{\varepsilon a} \rightarrow \frac{-(14 + \varepsilon k)}{\varepsilon k} = \frac{-\varepsilon - 4k}{k} \end{array} \right.$$

$$y = -\varepsilon x - \varepsilon$$

$$\rightarrow -\varepsilon \left(\frac{v}{k}\right) - \varepsilon = \frac{-\varepsilon - 4k}{k} \rightarrow \frac{-1 - \varepsilon k}{k} = \frac{-\varepsilon - 4k}{k} \rightarrow -1 - \varepsilon k = -\varepsilon - 4k$$

$$\rightarrow \varepsilon = 4k \rightarrow k = 1$$

$$\text{نسبت مساوی} = \frac{-\varepsilon - 4(1)}{1} = \boxed{-1}$$

$$\left. \begin{array}{l} y = -mx^2 + m x + 1 \\ y = -m - x \end{array} \right\} \rightarrow -mx^2 + m x + 1 = -m - x \rightarrow mx^2 + (-m-1)x - (m+1) = 0 \rightarrow \Delta < 0$$

$$(m+1)^2 + \varepsilon m(m+1) < 0 \Rightarrow (m+1)(\Delta m + 1) < 0$$

$$(m+1)(m+1 + \varepsilon m) < 0$$

$$\begin{array}{c} -1 \quad -\frac{1}{\varepsilon} \\ + \quad | \quad - \quad | \quad + \\ \hline m \in (-1, -\frac{1}{\varepsilon}) \end{array}$$

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