

۲۵ عالی نوشتی!

$$\rightarrow \frac{-\Delta}{fa} = V \rightarrow \frac{-(b^2 + 12)}{4f} = V \rightarrow b^2 + 12 = 21 \rightarrow b^2 = 9 \rightarrow b = \begin{matrix} f \\ -f \end{matrix} \checkmark$$

$$b=f \rightarrow y = -x^2 - fx + 3 \rightarrow \frac{-b}{fa} = \frac{-f}{-f} = 1 \rightarrow -f + 1 + 3 = 1 \checkmark$$

$$b=-f \rightarrow y = -x^2 + fx + 3 \rightarrow \frac{-b}{fa} = \frac{f}{-f} = -1 \rightarrow -f + 1 + 3 = 1 \checkmark$$

الف) $y = 4x^2 + 2x + 3$ $t = x^2 \rightarrow t^2 + 2t + 3 = 0$
 $\Delta = 4 - 12 < 0$ ← جواب ندارد ✓

ب) $4x^2 = t \rightarrow t^2 - 2t - 12 = 0$
 $(t-4)(t+3) = 0$
 $t=4 \rightarrow 4-x^2=4 \rightarrow x^2=0 \rightarrow x=0$
 $t=-3 \rightarrow 4-x^2=-3 \rightarrow x^2=7 \Rightarrow x = \pm\sqrt{7} \checkmark$

$$y = 4x^2 - 14x + m = 0$$

$$\rightarrow \text{ریشه ها} = \alpha \text{ و } \alpha + 2$$

$$\rightarrow P = \alpha(\alpha+2) = 1(3) = 3 \Rightarrow \frac{c}{a} = 3 \rightarrow m = 12 \checkmark$$

$$\rightarrow S = \alpha + \alpha + 2 = 2\alpha + 2 = \frac{14}{4}$$

$$\rightarrow 2\alpha + 2 = \frac{14}{4} \rightarrow 2\alpha = \frac{14}{4} - 2 = \frac{3}{2} \rightarrow \alpha = \frac{3}{4}$$

$$y = 4x^2 - 14x + 12 = 0$$

$$\uparrow \text{ریشه ها حالت } \alpha + b + c = 0 \rightarrow 4 - 14 + 12 = 0 \rightarrow \alpha = 1, \frac{12}{4} = 3 \checkmark$$

$$y = 3x^2 - 4x + m - 1 = 0$$

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

$$\begin{cases} 2\alpha - \beta = 4 \\ \alpha + \beta = 2 \end{cases} \rightarrow 3\alpha = 6 \rightarrow \alpha = 2 \rightarrow \beta = 0$$

$$P = 0 \rightarrow \frac{m-1}{3} = 0 \Rightarrow m-1 = 0 \rightarrow m = 1 \checkmark$$

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

$$\rightarrow \text{ریشه ها} = \alpha \text{ و } \frac{1}{\alpha}$$

$$\rightarrow P = \alpha \times \frac{1}{\alpha} = 1 \Rightarrow \frac{m^2 - 1}{-m} = 1 \rightarrow m^2 - 1 = -m \rightarrow m^2 + m - 1 = 0 \rightarrow (m+2)(m-1) = 0$$

$$\xrightarrow{m=1} -x^2 + fx - 1 = 0 \rightarrow \Delta > 0 \rightarrow m = 1 \checkmark$$

$$\xrightarrow{m=-2} 2x^2 + fx + 2 = 0 \rightarrow \Delta = 0 \rightarrow \text{یک ریشه دارد.}$$

$$y = x^2 - mx + 3 = 0$$

$$\rightarrow \alpha\beta = 3 \rightarrow \alpha\beta(\beta) = 3$$

$$P = \frac{c}{a} = 3$$

$$S = \frac{-b}{a} = m = \alpha + \beta$$

$$\rightarrow \alpha\beta = 3 \rightarrow \alpha = \frac{3}{\beta} = \frac{9}{4}$$

$$\beta = \frac{4}{3}$$

$$\rightarrow m = \alpha + \beta = \frac{14 + 27}{12} = \frac{41}{12}$$

$$y = x^2 - 4x + m = 0 \xrightarrow{\text{بسیار}} \alpha, 3\alpha$$

$$\rightarrow S = 4, P = m$$

$$\rightarrow \alpha + 3\alpha = 4\alpha = 4 \rightarrow \alpha = 1$$

$$\rightarrow \alpha \times 3\alpha = 3\alpha^2 = 3(1) = 3 \Rightarrow m = 3$$

$$y = x^2 - 7x + 2 = 0 \xrightarrow{\times \frac{1}{x}} x - 7 + \frac{2}{x} = 0 \rightarrow x + \frac{2}{x} = 7 \rightarrow \alpha + \frac{2}{\alpha} = 7$$

$$\rightarrow \alpha^3 + \frac{1}{\alpha^3} = ?$$

$$(\alpha + \frac{2}{\alpha})^3 = 7^3 \rightarrow \alpha^3 + \frac{1}{\alpha^3} + 3\alpha \times \frac{2}{\alpha} (\alpha + \frac{2}{\alpha}) = 343$$

$$\hookrightarrow \alpha^3 + \frac{1}{\alpha^3} = 343 - 42 = 301$$

$$y = -10t^2 + 40t$$

در آن نیمی که پایین برخورد می کند $t < 0$

زمانی که کوب پایین برخورد می کند $-10t^2 + 40t = 0 \rightarrow 10t(-t + 4) = 0$

ارتفاع ماکسیمم $\frac{b}{2a} = \frac{-40}{-20} = 2$ جایگذاری $-10(\frac{20}{10}) + 40(\frac{20}{10}) = -40 + 80 = 40$

الف)

