

۲۰

هستی نصیری نژاد

سوال ۱

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$$\begin{aligned} & \begin{cases} 9 = a - b + c \\ 1 = 9a + 3b + c \end{cases} \quad -\frac{b}{3a} = -1 \rightarrow -b = 3a \rightarrow b = 3a \\ & x = 1 \rightarrow 9 = a - 3a + c \rightarrow -1 = 2a \rightarrow a = -\frac{1}{2} \rightarrow b = 3a \\ & \quad \quad \quad 1 = 9a + 9a + c \rightarrow \quad \quad \quad \rightarrow \quad \quad \quad \rightarrow b = -1 \\ & \text{مقادیر: } -\frac{1}{2}x^2 - x + \frac{17}{2} \quad -a + c = 9 \rightarrow c = a + 9 \rightarrow c = -\frac{1}{2} + 9 \rightarrow c = \frac{17}{2} \end{aligned}$$

سوال ۲

۳

$$\begin{aligned} & \Delta > 0, S > 0, P > 0 \\ & S = -\frac{b}{a} \Rightarrow -\frac{m}{2} > 0 \rightarrow m < 0 \quad P = \frac{c}{a} \Rightarrow \frac{m+4}{2} > 0 \rightarrow m > -4 \\ & \Delta = b^2 - 4ac \rightarrow m^2 - (4 \times 2(m+4)) \Rightarrow m^2 - 8m - 32 > 0 \\ & \rightarrow (m-12)(m+4) > 0 \\ & m > 12 \quad \vee \quad m < -4 \\ & ((12, +\infty) \cup (-\infty, -4)) \cap (-\infty, 0) \cap (-4, +\infty) \rightarrow (-4, -2) \end{aligned}$$



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$$\alpha + \beta = \frac{1}{2\beta} \quad \alpha + \beta = -\frac{b}{a} = \frac{1-2m}{3}$$

$$\left[ \frac{\sqrt{3}}{2} \right] \text{سوال ۳}$$

$$\alpha \times \beta = \frac{c}{a} = \frac{2-m}{3}$$

$$3x^2 + (2m-1)x + 2-m = 0$$

$$\frac{1-2m}{3} = \frac{2-m}{2-m} \rightarrow (2-m)(1-2m) = 9 \rightarrow 2m^2 - 5m + 2 = 9 \rightarrow 2m^2 - 5m - 7 = 0$$

$$m = \frac{5 \pm \sqrt{25 - 4(2)(-7)}}{4} = \frac{5 \pm \sqrt{53}}{4}$$

با ایندای  $3y + 4x^3 > 0 \rightarrow$  قابل قبول ✓  
 غیر قابل قبول  $1 - 12 = -11 < 0$   
 چون  $\Delta$  منفی است

$$x^2 - x - 4 = 0 \rightarrow S = 1, P = -4$$

$$\left[ \frac{5}{4} \right] \text{سوال ۴}$$

$$\alpha + \beta = (\alpha_1 + \alpha_2)^3 - 3\alpha_1\alpha_2(\alpha_1 + \alpha_2) + \frac{\alpha_1 + \alpha_2}{\alpha_1\alpha_2} = 1 + 12 - \frac{1}{\varepsilon} = \frac{51}{\varepsilon}$$

$$\alpha \times \beta = (\alpha_1\alpha_2)^3 + (\alpha_1 + \alpha_2)^3 - 3\alpha_1\alpha_2 + \frac{1}{\alpha_1\alpha_2} = -4\varepsilon + 1 + 1 - \frac{1}{\varepsilon} = \frac{-221}{\varepsilon}$$

$$x^2 - \frac{51}{\varepsilon}x - \frac{221}{\varepsilon} = 0 \rightarrow \boxed{4x^2 = 51x + 221} \rightarrow \boxed{4x^2 - 51x - 221 = 0}$$

$$\left( \sqrt[3]{x^2} + \frac{1}{\sqrt[3]{x^2}} + 1 \right) \left( \sqrt[3]{x^2} - 1 \right) = 2\sqrt[3]{x}$$

$$\left[ \frac{5}{4} \right] \text{سوال ۵}$$

$$\left( \frac{\sqrt[3]{x^2} + 1 + \sqrt[3]{x^2}}{\sqrt[3]{x^2}} \right) \left( \sqrt[3]{x^2} - 1 \right) = 2\sqrt[3]{x} \rightarrow x^2 - 1 = 2x \rightarrow x^2 - 2x - 1 = 0$$

$$\alpha_1 + \alpha_2 = -\frac{b}{a} \rightarrow \boxed{2}$$

$$\left[ \frac{5}{4} \right]$$

$$a = 3B \rightarrow 3B^2 = \frac{r}{3} \rightarrow B^2 = \frac{r}{9} \quad \left\{ \begin{array}{l} B = \frac{r}{3} \rightarrow a = r \rightarrow a + B = \frac{1}{3} \\ B = -\frac{r}{3} \rightarrow a = -r \rightarrow a + B = -\frac{1}{3} \end{array} \right.$$

$$\text{سوال ۶}$$

$$a + B = \frac{9}{r} \rightarrow a = 3(a + B) = \pm 1 \rightarrow |a_1 - a_2| = \boxed{19} \rightarrow \boxed{19}$$



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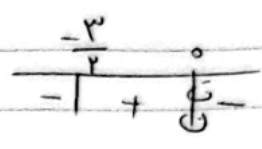
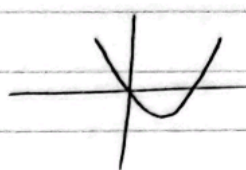
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سوال ۷ به انای هیچ مقدار.

$$y = x(ax + (r+ka)) = 0 \rightarrow ax + (r+ka) = 0 \rightarrow x = -\frac{r+ka}{a}$$

$a > 0$

$$y = -x \rightarrow a = 0 \text{ یا } 1 \rightarrow r + a \rightarrow -\frac{b}{a} > 0$$



سوال ۸

$$y = x^2 + ax - r, y = -x^2 - 2a + b$$

تقاطع

$$\rightarrow \frac{-b}{ra} = \frac{-a}{r} \rightarrow x_r = \frac{-(-r)}{r(-1)} = \frac{r}{-r} = -1$$

$$\frac{-a}{r} = -1 \rightarrow a = r$$

$$x^2 + rx - r = 1 \rightarrow x^2 + rx - r - 1 = 0 \rightarrow (x+r)(x-1) = 0 \rightarrow \begin{cases} x = 1 \\ x = -r \end{cases}$$

$$\begin{aligned} -x^2 - 2a + b &\xrightarrow{x=1} y = -1 - 2r + b = b - r \\ &\xrightarrow{x=-r} y = -r^2 + 2r + b = b - r \end{aligned} \rightarrow \begin{cases} b - r = 1 \\ b - r = 1 \end{cases} \rightarrow b = r + 1$$

$$a \times b = 1$$

سوال ۹

$$rx^2 - 9x + b = 0 \quad rx^2 + ax - 4 = 0$$

$$\begin{aligned} s &= \frac{a}{r} \\ p &= \frac{b}{r} \end{aligned} \quad \begin{aligned} s &= \frac{-a}{ra} = -\frac{1}{r} \\ p &= \frac{-4}{a} \end{aligned} \quad \begin{aligned} x_1 + x_2 &= y_1 + y_2 + \frac{1}{r} \\ \frac{a}{r} &= -\frac{1}{r} + 1 \rightarrow a = 1 \end{aligned}$$

$$\begin{aligned} x_1 + x_2 &= (y + \frac{1}{r})(y + \frac{1}{r}) \\ &\rightarrow y + y + \frac{1}{r}(y + y) + \frac{1}{r^2} \\ &= -r + \frac{1}{r}(-\frac{1}{r}) + \frac{1}{r^2} = -r \end{aligned}$$

$$\left[ \frac{-4 \times 1}{r} \right] = -r$$

$$x_1 \times x_2 = -r = \frac{b}{r} \rightarrow b = -r^2$$

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$$x^2 + 4x + m = 0 \quad , \quad x^2 + 2x - 3m = 0$$

$$x^2 + 4x + m - (x^2 + 2x - 3m) = 0$$

$$\Sigma x + \Sigma m = 0$$

$$x + m = 0 \rightarrow x = -m$$

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

$$x^2 + 3x = 0 \quad x(x+3) = 0 \rightarrow x = -3 \rightarrow m = 3$$

$$x^2 + 4x + 0 = 0$$

$$\rightarrow (x+1)(x+3) = 0$$

$$\begin{aligned} &\rightarrow x = -1 \quad \text{غير مستر} \\ &\rightarrow x = -3 \quad \text{مستر} \end{aligned}$$

$$x^2 + 2x - 18 = 0 \rightarrow (x+3)(x-6) = 0$$

$$\begin{aligned} &\rightarrow x = -3 \quad \text{مستر} \\ &\rightarrow x = 6 \quad \text{غير مستر} \end{aligned}$$

$$3 - (-1) = 4$$

سوال 10