ارشیا ایزدی کلاس دهم تجربی ۲

۱- $x^2 - 5x + 2 = 0 \quad S = 5 \quad P = 2 \Rightarrow \alpha \cdot \beta = 2 \Rightarrow \alpha = \frac{2}{\beta} \Rightarrow 4\alpha = \frac{8}{\beta}$

$$\frac{\frac{8}{\beta} + \beta^5}{5\beta^2} \xrightarrow{\times \beta} \frac{8 + \beta^6}{5\beta^3} = \frac{\alpha^3\beta^3 + \beta^6}{5\beta^3} = \frac{\alpha^3 + \beta^3}{5} = \frac{S^3 - 3SP}{5}$$

$$= \frac{125 - 30}{5} = \boxed{19}$$

۲- میانگین هم عرض $\Rightarrow \frac{x_1 + x_2}{2} = \text{میانه} \Rightarrow \frac{-1.5 + 3}{2} = 0.75$

$0.75 \times 2 = 1.5$

۳- $x^2 + 2kx + 5 = 0 \qquad S = -2k \qquad \frac{-2k + \frac{6}{5}k}{2} = -\frac{1}{5}k$

$\Delta = \frac{4}{5}k \qquad \frac{-2k - \frac{6}{5}k}{2} = -\frac{5}{5}k$

$P = 5 \Rightarrow \frac{5}{5} \times \frac{1}{5} \times k^2 \Rightarrow k^2 = 9 \Rightarrow k = \pm 3 \qquad \left[\frac{k^2}{2}\right] = \left[\frac{9}{2}\right] = 4$

۴- $-2x^2 - 4x + 1$

$\frac{x_1 + x_2}{2} = \frac{-5+3}{2} = -1 = x_S$

$-\frac{b}{2a} = -1 \Rightarrow b = 2a \qquad ax^2 + 2ax + c \Rightarrow -\frac{4a^2 - 4ac}{4a} = \frac{a(a-c)}{a}$

$= -1 \Rightarrow c = a + 1 \qquad ax^2 + 2ax + a + 1 \qquad \alpha^2 + \beta^2 = 0 = S^2 - P$

$\Rightarrow 4 - \frac{2a - 2}{a} = 5$

$\frac{2a+2}{a} = -1 \Rightarrow 2a + 2 = -a \Rightarrow 3a = -2 \Rightarrow a = -\frac{2}{3}$

$\Rightarrow -\frac{2}{3}x^2 - \frac{4}{3}x + \frac{1}{3} \Rightarrow (x, y) = (0, \frac{1}{3})$

۵- $\frac{-5 + \sqrt{20 + 4m}}{-4} < \frac{9}{4} \Rightarrow -\sqrt{20 + 4m} < 14 \Rightarrow \sqrt{20 + 4m} > -4$

$\Rightarrow 20 + 4m > 0 \Rightarrow 20 > -4m \Rightarrow \left(-\frac{20}{4} < m\right)$

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$$\frac{-5-\sqrt{25+4m}}{-2} < \frac{9}{2} \Rightarrow -\sqrt{25+4m}) - 4 \Rightarrow \sqrt{25+4m} < 4$$

$$25+4m < 16 \Rightarrow 4m < -9 \Rightarrow \left(m < -\frac{9}{4}\right)$$

$$-\frac{25}{4} < m < -\frac{9}{4} \Rightarrow -6/25 < m < -2/25 \Rightarrow$$ ۴ عدد صحیح

۶-

$$mx^2 - 12x + (5m-1)$$

$$m>0 \quad \frac{-\Delta}{4a} = 2 \Rightarrow \frac{144 - 4(5m^2 - m)}{-4m} \Rightarrow \frac{144 - 20m^2 + 4m}{-4m} = 2$$

$$\Rightarrow \frac{4(-5m^2 + m + 36)}{4(-m)} \Rightarrow -5m^2 + m + 36 = -2m \Rightarrow 5m^2 - 3m - 36 = 0$$

$$(5m+12)(m-3) = 0 \qquad m \begin{cases} 3 \ ✓ \\ -\frac{12}{5} \ ✗ \end{cases} \quad m > 0 \Bigg\} \Rightarrow \frac{-b}{2a} = \frac{12}{2m} = \frac{12}{6} = 2$$

۷-

$$\beta \text{ و } a \text{ و } \alpha \Rightarrow a \text{ و } aq \text{ و } aq^2$$

$$a^2 = \alpha\beta \Rightarrow a^2 = P \Rightarrow a^2 = 2a - 1$$

$$a^2 - 2a + 1 = 0 \Rightarrow (a-1)(a-1) = 0 \Rightarrow a = 1$$

۸-

$$t^2 - 7t - 5 = 0 \Rightarrow P = -5 \text{ و } S = 7 \Rightarrow 2P^2 - 3SP + 2S =$$

$$\Rightarrow \text{ ریشه } \begin{cases} \frac{7+\sqrt{69}}{2} \Rightarrow 59 + 7\sqrt{69} \\ \frac{7-\sqrt{69}}{2} \ ✗ \end{cases}$$

۹-

$$\frac{-b}{2a} = \frac{2}{k} \qquad \frac{4}{k} - \frac{8}{k} - 6 = \frac{-8}{k} - 4 \Rightarrow k = 2$$

$$2x^2 - 4x - 6 \Rightarrow \frac{16+48}{-8} = -8$$

۱۰-

$$y = -m - x \qquad y = -mx^2 + mx + 1$$

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

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

$$5m^2 + 6m + 1 < 0 \Rightarrow (5m+1)(m+1) < 0 \Rightarrow -1 < m < -\frac{1}{5} \quad -2$$

هیچ عدد صحیحی نیست