Subject : ______ آیناز کریم زاده _ تطبیقی ۹۵ - یازدهم ریاضی B Date

۱-

$\alpha\beta = \frac{4}{3} \rightarrow 3\beta^2 = \frac{4}{3} \rightarrow \beta^2 = \frac{4}{9} \rightarrow \beta = \pm\frac{2}{3} \rightarrow \alpha = \pm 2$

$\alpha = 3\beta$ $\qquad \frac{a}{4} = \alpha + \beta$

$\rightarrow a = 4\alpha + 4\beta \rightarrow (8)$

$\rightarrow (-8) \rightarrow 8 - (-8) = 16$

۲-

$36x^2 - (m+14)x + 1 = 0$

$\rightarrow \alpha\beta = \frac{1}{36}$ $\qquad \frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \frac{\sqrt{\alpha}+\sqrt{\beta}}{\sqrt{\alpha\beta}} = 5$

$(\sqrt{\alpha}+\sqrt{\beta})^2 \rightarrow \alpha + \beta + 2\sqrt{\alpha\beta} \rightarrow \sqrt{\alpha}+\sqrt{\beta} = \frac{5}{6} \rightarrow \alpha+\beta+\overbrace{2\sqrt{\alpha\beta}}^{\frac{2}{6}} = \frac{5}{6}$

$\alpha + \beta = \frac{m+14}{36} = \frac{3}{6}$

$\rightarrow m + 14 = 18 \rightarrow \boxed{m = 4}$

$mx^2 + 4x + 2 = 0 \rightarrow \frac{2}{m} = \frac{2}{2} = \boxed{1}$

۳-

$4\alpha^3 + k\alpha^2 - 9\alpha - 2 = 0$ $\qquad \rightarrow 4(\alpha^3+\beta^3) + k(\alpha^2+\beta^2) \underbrace{-9(\alpha+\beta)}_{-9} - 4 = 0$

$4\beta^3 + k\beta^2 - 9\beta - 2 = 0$ $\Big\} + = 0$

$(\alpha+\beta)^3 - 3\alpha\beta(\alpha+\beta) \rightarrow 1 + 6 = 7$ $\qquad \rightarrow 28 + 5k - 13 = 0 \rightarrow 15 = -5k$

$(\alpha+\beta)^2 - 2\alpha\beta = 1 + 4 = 5$ $\qquad \rightarrow \boxed{k = -3}$

۴-

$\alpha \quad \beta \quad 0$

$+ \mid - \mid + \mid$ $\rightarrow 0 + 0 + a > 0$

$x^2 + 6x + \theta = 0$ $\qquad \alpha^2 + 2(\alpha^2 + \beta^2) = 12\sqrt{2} + 85$

$\alpha + \beta = -6$ $\qquad \alpha^2 + 72 - 4\theta = 12\sqrt{2} + 85$

$\alpha = -\beta - 6$

۵) $x^2 - Vx^2 - 0 = 0 \rightarrow c = -0 \Rightarrow x_1^2 > 0 \checkmark \quad x_2^2 < 0$ ✗

$\sqrt{x_1^2} = \pm x_1 \rightarrow \alpha + \beta = 0$

$\alpha\beta = p \Rightarrow 2p = \frac{V + \sqrt{99}}{2}$

$x_1^2 = \frac{V + \sqrt{2^2 \cdot 9 + 2^2}}{2} = \frac{V + \sqrt{99}}{2}$

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۶) $2x^2 - ax + b = 0 \rightarrow \alpha_1 + \beta_1 = S_1 = \frac{a}{2} \rightarrow 2x^2 - 12x + b = 0$

$2ax^2 + ax - 4 = 0 \rightarrow \alpha_2 + \beta_2 = S_2 = \frac{-1}{2} \rightarrow -2x^2 + 12x - 4 = 0$

$1 + \left(\frac{1}{2}\right) = \frac{a}{2} \rightarrow a = 1$

$\alpha_2\beta_2 = 2 \rightarrow \left(\alpha_2 + \frac{1}{2}\right)\left(\beta_2 + \frac{1}{2}\right) = \frac{b}{2}$

$\rightarrow \alpha_2\beta_2 + \frac{1}{2}(\alpha_2 + \beta_2) + \frac{1}{4} = \frac{b}{2} \rightarrow b = 4 \qquad \left[\frac{-4}{2}\right] = [-12] = -2$

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۸) $x^2 - (a+1)x + a = 0 \rightarrow 2\alpha_1 = a + 1 \qquad \alpha^2 + 2\alpha = a$

$x^2 - (2a+1)x + b = 0 \rightarrow 2\alpha + 2 = 2a + 1 \qquad \begin{cases} \alpha^2 + 2\alpha = a \\ 2\alpha + 1 = a \end{cases} \rightarrow \alpha^2 - 1 =$

$\rightarrow 2\alpha + 2 = 10 \rightarrow \alpha = 4 \qquad \alpha = \pm 1 \rightarrow +1 \checkmark$

$\alpha^2 + 2\alpha = b \rightarrow 16 + 8 = 24 = b \qquad \beta = 3 \checkmark$

$b - a = 24 - 3 = 21$

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۷) $ax^2 - ax - b = 0 \rightarrow \alpha + \beta = 1$

$\alpha\beta = \frac{-b}{a}$

$20\beta\left(\frac{-\alpha}{\beta} - 1\right) + 20\beta^2 + 20\alpha^2 \rightarrow -20\alpha\beta + 20\left(\frac{1}{(\alpha+\beta)^2} - 2\alpha\beta\right)$

$\frac{20b}{a} + \frac{40b}{a} + 20 = 17 \rightarrow \frac{60b}{a} = -3 \rightarrow -\frac{b}{a} = \frac{1}{20} = \alpha\beta$

$\alpha - \beta \rightarrow \sqrt{(\alpha - \beta)^2} = \sqrt{(\alpha + \beta)^2 - 4\alpha\beta} = \sqrt{1 - \frac{1}{5}} = \frac{2}{\sqrt{5}}$

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$x^2 + x - 1 - m^2 = 0 \rightarrow \alpha + \beta = -1$ — 9.

$\alpha^2 + \beta^2$ $\qquad \alpha\beta = -1 - m^2 \rightarrow \alpha, \beta < 0$

$\hookrightarrow (\alpha+\beta)^2 - 2\alpha\beta = 1 + 2 + 2m^2 = 2m^2 + 3 > 0 \rightarrow m = 0$

$\frac{-b}{2a} = -1$ $\quad$ ext $\Big|_{-1}^{1}$ $\quad \frac{\alpha+\beta}{2} = -1 \rightarrow \alpha + \beta = -1 = \frac{-b}{a}$ — 10.

$a(+1) + b(-1) + c = 1$ $\qquad \frac{1}{(\alpha+\beta)^2} - 2\alpha\beta = 0 \rightarrow \alpha\beta = \frac{c}{a} = -2$

$a - b + c = 1 \rightarrow -a + a - 2a = +1$

$\rightarrow a = \frac{-1}{2}$ $\quad \frac{c}{a} = -2$ $\rightarrow$ $\boxed{c = 1}$ ✓