تشریح شماره 19 (آرایا محمدزاد) یازدهم B

①

$3x^2 - ax + 4 = 0$

$P = \frac{c}{a} = \frac{4}{3} = 3\alpha^2 \to \alpha^2 = \frac{4}{9} \to \alpha = \pm \frac{2}{3}$

$\alpha = \frac{2}{3} \to x_1 = \frac{2}{3} \ , \ x_2 = 2$

$\alpha = -\frac{2}{3} \to x_1 = \frac{2}{3} \to x_2 = -2$

$|8 - (-8)| = 16$ → جواب

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②

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

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

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

$\alpha\beta = \frac{1}{36}$

$\sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} = 5 \to \frac{1}{\alpha} + \frac{1}{\beta} + 2\sqrt{\frac{1}{\alpha\beta}} = 25$

$m + 14 + 12 = 25 \to m = -1 \to -x^2 + 4x + 2 = 0 \to x = \frac{-4 \pm \sqrt{17}}{-2} \Rightarrow$

$\frac{-4 + \sqrt{17}}{-2} \times \frac{-4 - \sqrt{17}}{-2} = -2$ → جواب

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③

$4x^3 + kx^2 - 9x - 2 = 0$

$\alpha + \beta = 1 \ , \ \alpha\beta = -2$ → معادله جدید $: x^2 - x - 2 = 0$

$k = ?$

$\frac{4x^3 + kx^2 - 9x - 2}{0} \Big| \frac{x^2 - x - 2}{4x + 1}$

$k + 4 = 1 \to k = -3$

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④

$x^2 + 6x + a = 0$

$3\alpha^2 + 2\beta^2 = 12\sqrt{2} + 85$

$a = ?$

$2.5\alpha^2 + 2.5\beta^2 + 0.5\alpha^2 - 0.5\beta^2 = 2.5(\alpha^2 + \beta^2) + 0.5(\alpha^2 - \beta^2)$

$\to 90 - 5a + 6\sqrt{9-a} = 85 + 12\sqrt{2} \Rightarrow$

$\left(\frac{-5a + 90 - 85}{5} - 12\sqrt{2}\right)^2 = \left(-6\sqrt{9-a}\right)^2 \Rightarrow a = 1$ → جواب

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⑤

$x^4 - 7x^2 - 5 = 0$

$2P^2 - 3SP + 2S = ?$

$x^2 = t \to t^2 - 7t - 5 = 0 \Rightarrow t = \frac{7 \pm \sqrt{69}}{2}$ (قبق / غ ق ق)

$x = \pm\sqrt{\frac{7 + \sqrt{69}}{2}} \Rightarrow S = 0 \ , \ P = \frac{-7 + \sqrt{69}}{2}$

$2P^2 - 3SP + 2S = \frac{2(49 + 14\sqrt{69} + 69)}{4} = 59 + 7\sqrt{69}$

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⑥

$2x^2 - ax + b = 0 \to x_1 = \alpha + \frac{1}{2} \ , \ x_2 = \beta + \frac{1}{2}$

$2ax^2 + ax - 6 = 0$

$\left[\frac{ab}{4}\right] = ?$

$S = \alpha + \beta + 1 = \frac{a}{2} \to \alpha = -\frac{3}{2} \ , \ \beta = 2$

$b = -6 \ , \ a = 1$

$x_1 = \alpha \ , \ x_2 = \beta \ / \ S = \frac{a}{-2a} = \alpha + \beta \Rightarrow \alpha + \beta = -\frac{1}{2}$

$2x^2 + x - 6 = 0 \to \alpha = -2 \ , \ \beta = \frac{3}{2}$

$\left[\frac{ab}{4}\right] = \left[\frac{-6}{4}\right] = -2$ → جواب

-1.5

(7)

$ax^2 - ax - b = 0$

$\alpha + \beta = 1$

$\alpha \times \beta = -b/a$

$x^2 - x - b/a = 0 \to x^2 - x = b/a \Rightarrow \beta^2 - \beta = \boxed{b/a}$ (t)

$40\beta^2 + 20\alpha^2 - 20\beta = 17$

($20\beta^2 + 20\beta^2$)

$20(1 + \frac{2b}{a}) + 20(\frac{b}{a}) = 20 + 60t = 17 \to 60t = -3 \to \frac{b}{a} = -\frac{1}{20}$

$\alpha - \beta = \frac{\sqrt{\Delta}}{|a|} = \sqrt{\frac{4}{5}} \to \frac{2}{\sqrt{5}}$ جواب

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(8)

$x^2 - (a+1)x + a = 0 \to x_1 = 2\alpha - 1,\ x_2 = 2\alpha + 1$

$P = 4\alpha^2 - 1 = a$

$S = 4\alpha = a + 1$

$a = 1$ و 0 (0: غ ق ق، 1: ق)

$a = 3$

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

$x_1' = 2\beta,\ x_2' = 2\beta + 2$

$S' = 4\beta + 2 \to \beta = 2$

$P = 4\beta^2 + 4\beta = b \to \boxed{b = 24}$

$P' = 24$

$24 - 3 = \boxed{21}$ اختلاف

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(9)

$x^2 + x - 1 - m^2 = 0$

$\alpha^2 + \beta^2 = ?$

$\alpha + \beta = -1$

$\alpha\beta = -(m^2 + 1)$

$(\alpha+\beta)^2 - 2\alpha\beta = (-1)^2 + 2(m^2+1) = 1 + 2m^2 + 2 = 2m^2 + 3 =$ (3) پاسخ

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(10)

$A(3, y) / B(-5, y)$

$-\frac{b}{2a} = \frac{S}{2} = -1 \to S = -2$

$\alpha^2 + \beta^2 = 5$

$a = -2/3$

$S^2 - 2P = 4 - 2P = 5 \to P = c/a = -1/2$

$\frac{c}{a} = -1/2$

$C = -\frac{a}{2} = \frac{\frac{2}{3}}{\frac{2}{1}} = \boxed{\frac{1}{3}}$ جواب