نام و نام خانوادگی ...علیرضا زرابخشت... پاسخنامه تشریحی تکلیف شماره ..۱۹.. کلاس یازدهم ریاضی A

۱	$P = \frac{4}{3} \to \alpha(3\alpha) = \frac{4}{3} \to \alpha^2 = \frac{4}{9} \to \alpha = \pm\frac{2}{3}$ $\frac{2}{3} \to 3(\frac{2}{3})^2 - \frac{2a}{3} + 4 = 0 \to \frac{-2a}{3} = \frac{-16}{3} \to a = 8$ $-\frac{2}{3} \to 3(-\frac{2}{3})^2 + \frac{2a}{3} + 4 = 0 \to \frac{2a}{3} = -\frac{16}{3} \to a = -8$
۲	$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 5 \to \frac{\sqrt{\alpha}+\sqrt{\beta}}{\sqrt{\alpha\beta}} = 5 \to \frac{\sqrt{\alpha}+\sqrt{\beta}}{\sqrt{\frac{1}{36}}} = 5 \to \sqrt{\alpha}+\sqrt{\beta} = \frac{5}{6} \to \alpha+\beta+2\sqrt{\alpha\beta} = \frac{25}{36}$ $\alpha+\beta = \frac{13}{36} = S \to S = \frac{m+14}{36} = \frac{13}{36} \to m = -1$ $-m^2 + 3m + 2 = 0 \to P = \frac{2}{-1} = -2$
۳	با جایگذاری داریم: $4\alpha^3 + k\alpha^2 - 9\alpha - 4 = 4\beta^3 + k\beta^2 - 9\beta - 4$ ← فرض می‌کنیم $\alpha - \beta = 3$ $\alpha+\beta = 1$ $\alpha\beta = -2$ $(\alpha+\beta)^2 - (\alpha-\beta)^2 = 4\alpha\beta$ $1 - (\alpha-\beta)^2 = -8$ $\alpha - \beta = \pm 3$ $4(\alpha^3-\beta^3) + k(\alpha^2-\beta^2) = 9\alpha - 9\beta \to 4(9) + 3(k) = 27$ $(\alpha-\beta)(\alpha^2+\alpha\beta+\beta^2) = 3 \cdot 3 = 9$ ، $(\alpha-\beta)(\alpha+\beta) = 3$ ، 9×3 $3(k) = -9$ $k = -3$ حال اگر با $\alpha - \beta = -3$ هم بریم باز $k = -3$
۴	$x^2 + 6x + a = 0$ و $\alpha < \beta < 0$, $3\alpha^2 + 2\beta^2 = 12\sqrt{2} + 85$ | $\alpha+\beta = -6$ | $\alpha\beta = a > 0$ $\alpha^2 + 2(\alpha^2+\beta^2) = 12\sqrt{2} + 85 \to \alpha^2 + 72 - 4a = 12\sqrt{2} + 85 \to \alpha^2 - 4\alpha\beta = 12\sqrt{2} + 13 \to$ $\alpha, \beta = \frac{-6 \pm \sqrt{36 - 4a}}{2} = \frac{-3 \pm \sqrt{9-a}}{t} \to \alpha = -3 - t$, $\beta = -3 + t$ (سمت چپی) $9 + t^2 + 6t - 4(9 - t^2) = 12\sqrt{2} + 13$ $9 + t^2 + 6t - 36 + 4t^2 = 12\sqrt{2} + 13 \to$ $5t^2 + 6t = 12\sqrt{2} + 40 \to 6t = 12\sqrt{2}$ $t = 2\sqrt{2}$ ، $\sqrt{9-a} = 2\sqrt{2} \to 9 - a = 8 \to a = 1$
۵	$x^4 - 7x^2 - 5 = 0$ | $2P^2 - 4SP + 2S = ?$ | $t^2 - 7t - 5 = 0 \to t_{1,2} = \frac{7 \pm \sqrt{49+20}}{2} = \frac{7 \pm \sqrt{69}}{2}$ $x_{1,2} = \pm\sqrt{\frac{7+\sqrt{69}}{2}}$ $x_{3,4} = \pm\sqrt{\frac{7-\sqrt{69}}{2}}$ غ ق ق $S = 0$ ، $P = \sqrt{\frac{7+\sqrt{69}}{2}} \times -\sqrt{\frac{7+\sqrt{69}}{2}} = -\left(\frac{7+\sqrt{69}}{2}\right)$ $2P^2 = 2\left(\frac{49 + 69 + 14\sqrt{69}}{4}\right) = 59 + 7\sqrt{69}$

(۱) $2x^2 - ax + b = 0$ ↓ $S = \frac{a}{2}$ (۲) $2ax^2 + ax - 6 = 0$ ↓ $S = \frac{-a}{2a} = -\frac{1}{2}$ $\frac{a}{2} = -\frac{1}{2} + 1 \to a = 1$ $\to 2x^2 + x - 6 = 0 \to x = -2, \frac{3}{2}$ ریشه‌های (۱) ← $-\frac{3}{2}, 2$ $(x + \frac{3}{2})(x - 2) = x^2 - \frac{1}{2}x - 3 \xrightarrow{\times 2} 2x^2 - x - 6$, $b = -6$ $[\frac{-6 \times 1}{4}] = [-\frac{3}{2}] = -2$		۶
$ax^2 - ax - b = 0$, $\alpha + \beta = 1 \to \alpha = 1 - \beta$, $\alpha\beta = \frac{-b}{a}$ | $40\beta^2 + 20\alpha^2 - 20\beta = 17$ $a\alpha^2 = a\alpha + b$, $a\beta^2 = a\beta + b \to \beta^2 = \beta + \frac{b}{a}$ | $20\alpha^2 = 20(1-\beta)^2 = 20(\beta^2 + 1 - 2\beta)$ $20\alpha^2 = 20\beta^2 + 20 - 40\beta \to$ $40\beta^2 + 20\beta^2 + 20\beta - 60\beta + 20 = 17 \to 60\beta^2 - 60\beta + 3 = 0 \to 20\beta^2 - 20\beta + 1 = 0$ $\beta = \frac{20 \pm \sqrt{320}}{40} \Rightarrow \beta = \frac{20 \pm 8\sqrt{5}}{40} \to \frac{5 \pm 2\sqrt{5}}{10}$ $\alpha = 1 - \beta = 1 - \frac{5 + 2\sqrt{5}}{10} = \frac{5 - 2\sqrt{5}}{10}$ یا $\frac{5 + 2\sqrt{5}}{10}$ | تفاضل ریشه‌ها: $\left\| \frac{5 - 2\sqrt{5} - 5 - 2\sqrt{5}}{10} \right\| = \frac{4\sqrt{5}}{10} = \frac{2\sqrt{5}}{5}$		۷
$x^2 - (a+1)x + a = 0 \to$ مجموع ضرایب $= 0 \to$ ریشه‌ها $x = 1$, $\frac{c}{a} = a \to a = 3$ $x^2 - (3a + 1)x + b$ ریشه‌ها $\alpha, \alpha + 2 \to 2\alpha + 2 = 3a + 1 = 10$ $2\alpha = 8$ حاصل ضرب ریشه‌ها ۲۴ ← $\alpha = 4$, $\alpha + 2 = 6$ $24 - 3 = 21$		۸
$\alpha^2 + \beta^2 = S^2 - 2P \to (-1)^2 - 2(-1 - m^2) \Rightarrow 1 + 2 + 2m^2 \to 2m^2 + 3 \to Min \| 3$		۹
رأس: $(-1, 1)$ $y = a(x+1)^2 + 1 \to 0 = a(x+1)^2 + 1 \Rightarrow (x+1)^2 = -\frac{1}{a}$ $\alpha + 1 = \sqrt{-\frac{1}{a}}$, $\beta + 1 = -\sqrt{-\frac{1}{a}} \to \alpha = \sqrt{-\frac{1}{a}} - 1$, $\beta = -\sqrt{-\frac{1}{a}} - 1$ $\alpha + \beta = -2$ $\alpha\beta = 1 + \frac{1}{a}$ $\alpha^2 + \beta^2 = 5 \to 4 - 2 - \frac{2}{a} = 5 \to a = -\frac{2}{3}$ $(\alpha + \beta)^2 - 2\alpha\beta$ $y = -\frac{2}{3}(x+1)^2 + 1$ ↓ $x = 0$ ↓ $(0, \frac{1}{3})$		۱۰