نام و نام خانوادگی امیرطاها طاهری ...... پاسخنامه تشریحی تکلیف شماره ۲۳ ...... کلاس دهم تجربی ...... A

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$\frac{-b}{2a} = -1 \Rightarrow 2a = b$

$\left.\begin{aligned} 9a+3b+c&=1 \\ a-b+c&=9 \end{aligned}\right\} 8a+4b=-8$

$2a+b=-2$

$\Rightarrow b=-1$

$a=-\frac{1}{2} \Rightarrow c=\frac{17}{2}$

$y = -x^2 - 2x + 17$

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$\Delta > 0 \longrightarrow m^2 - 8(m+6) > 0 \Rightarrow m^2 - 8m - 48 > 0$ I

$S > 0 \longrightarrow \frac{-m}{2} > 0 \Rightarrow m < 0$ II

$P > 0 \longrightarrow \frac{m+6}{2} > 0 \Rightarrow m > -6$ III

	-4		12	
+		−		+

$I \cap II \cap III \longrightarrow (-6, -4)$

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$\alpha + \beta = \frac{1}{\alpha\beta} \longrightarrow \frac{1-2m}{3} = \frac{3}{2-m} \Rightarrow (2-m)(1-2m) = 9$

$\Rightarrow m^2 - 5m - 14 = 0$ → $m = \frac{7}{2}$ ✓ , $m = -1$ ✗

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

شرط دو ریشه $\longrightarrow (2m-1)^2 - 12(2-m) > 0$

$-1: (-3)^2 - 12(3) > 0 \Rightarrow 9 - 36 > 0$ ✗

$\frac{7}{2}: (7-1)^2 - 12(2-\frac{7}{2}) > 0 \longrightarrow 36 + 18 > 0$ ✓

$m = \frac{7}{2}$

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$S': x_2^3 + \frac{1}{x_1} + x_1^3 + \frac{1}{x_2} = (x_1^3 + x_2^3) + \left(\frac{x_2 + x_1}{x_1 x_2}\right) \to (S^3 - 3SP) + \left(\frac{S}{P}\right) = 1 + 12 - \frac{1}{4} = \frac{51}{4}$

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

$x^2 - S'x + P' = 0 \longrightarrow 4x^2 - 51x - 221$

$P': \left(x_2^3 + \frac{1}{x_1}\right)\left(x_1^3 + \frac{1}{x_2}\right) = x_1^3 x_2^3 + \frac{x_2^3}{x_2} + \frac{x_1^3}{x_1} + \frac{1}{x_1 x_2} \to P^3 + S^2 - 2P + \frac{1}{P} = -64 + 1 + 8 - \frac{1}{4} = -\frac{221}{4}$

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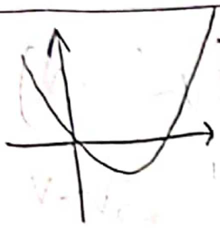
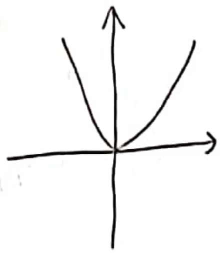
$\left(\sqrt[3]{x^2} + \frac{1}{\sqrt[3]{x^2}} + 1\right)\left(\sqrt[3]{x^2} - 1\right) = 2\sqrt[3]{x} \Rightarrow x\sqrt[3]{x} - \cancel{\sqrt[3]{x^2}} + \cancel{1} - \frac{1}{\sqrt[3]{x^2}} + \cancel{\sqrt[3]{x^2}} - \cancel{1} = 2\sqrt[3]{x}$

$\Rightarrow \frac{x^2 - 1}{\sqrt[3]{x^2}} = 2\sqrt[3]{x} \Rightarrow 2x = x^2 - 1 \Rightarrow x^2 - 2x - 1 = 0$

$x_1 + x_2 = S = \frac{-b}{a} \to \frac{2}{1} = 2$

ریشه‌های معادله α و β پس: $\alpha = 3\beta$ $\alpha\beta = 3\beta^2$ $\Rightarrow \alpha = \pm 2$ $\frac{4}{3} = 3\beta^2 \Rightarrow \beta^2 = \frac{4}{9} \Rightarrow \beta = \pm\frac{2}{3}$ $+2: 12 - 2a + 4 = 0 \Rightarrow a = 8$ $-2: 12 + 2a + 4 = 0 \Rightarrow a = -8$ $8 - (-8) = \underline{16}$	۶
 $a: a > 0$ $\Delta: (3+2a)^2 > 0$ ✓ $S: \frac{-3-2a}{2a} > 0$ $-\frac{3}{2}$ 0 $-$ $+$ $-$ $-\frac{3}{2} < a < 0$ I  $(3+2a)^2 = 0$ $3 + 2a = 0$ $a = \frac{-3}{2}$ II $\mathrm{I} \cup \mathrm{II} \rightarrow \frac{-3}{2} \leq a < 0$	۷
$\frac{-a}{2} = \frac{2}{-2} \Rightarrow \underline{a = 2}$ $x^2 + 2x - 2 = 1 \Rightarrow x^2 + 2x - 3 = 0$ $\Rightarrow x = -3,\ x = 1$ $x^2 + 2x - 2 = -x^2 - 2x + b$ $2x^2 + 4x - 2 - b = 0$ $\xrightarrow{x=1} 2 + 4 - 2 - b = 0 \Rightarrow b = 4$ $\xrightarrow{x=-3} 18 - 12 - 2 = b \Rightarrow \underline{b = 4}$ $ab = \boxed{8}$	۸
$2x^2 - ax + b = 0$ — α, β $\alpha + \beta = \frac{a}{2}$ $\alpha\beta = \frac{b}{2}$ $2ax^2 + ax - 6 = 0$ $\alpha' + \beta' = \frac{-a}{2}$ $\alpha'\beta' = -3$ $\alpha + \beta = \alpha' + \beta' + 1 \Rightarrow \frac{a}{2} = \frac{-a}{2} + 1 \Rightarrow a = 1$ $\alpha'\beta' = (\alpha - \frac{1}{2})(\beta - \frac{1}{2}) = \alpha\beta + \frac{1}{4} - \frac{1}{2}\cancel{(\alpha+\beta)}^{\frac{1}{2}}$ $\alpha'\beta' = \frac{b}{2} + \cancel{\frac{1}{4}} - \cancel{\frac{1}{4}} \Rightarrow \frac{b}{2} = -3 \Rightarrow b = -6$ $\left[\frac{ab}{4}\right] = \left[\frac{-6}{4}\right] = \left[-\frac{3}{2}\right] = \boxed{-2}$	۹
$\cancel{x^2} + 2x - 3m = \cancel{x^2} + 6x + m$ $\Rightarrow -4x = 4m$ $\Rightarrow x = -m$ $\Rightarrow x^2 + 6x - x = 0$ $\Rightarrow x = -5$ ✓ $x = 0$ ✗ $x^2 + 2x - 15 = 0 \Rightarrow x = -5 \quad x = 3$ $x^2 + 6x + 5 = 0 \Rightarrow x = -5 \quad x = -1$ $3 - (-1) = \boxed{4}$ $x^2 + 2x - 3m = 0 \xrightarrow{x=-5} 25 - 10 - 3m = 0 \Rightarrow m = 5$	۱۰