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نام و نام خانوادگی ...مبین...حسین‌نژاد... پاسخنامه تشریحی تکلیف شماره ...۲۳... کلاس ...دهم...B...

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

$(-1,9) \rightarrow a - b + c = 9 \xrightarrow{2a=b} -a + c = 9$

$(3,0) \rightarrow 9a + 3b + c = 0 \quad 15a - c = 0$

$\begin{cases} a - c = -9 \rightarrow c = 9 + a = \frac{18}{2} - \frac{1}{2} = \frac{17}{2} \\ 15a - c = 0 \end{cases}$

$14a = -18 \rightarrow a = \frac{-1}{2}, b = -1, c = \frac{17}{2}$

$y = \frac{-1}{2}x^2 - x + \frac{17}{2}$ ✓

(۲)

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(۱) $\frac{c}{a} > 0 \rightarrow \frac{m+6}{2} > 0 \rightarrow m + 6 > 0 \rightarrow m > -6$

(۲) $\frac{-b}{a} > 0 \rightarrow \frac{-m}{2} > 0 \rightarrow -m > 0 \rightarrow m < 0$

(۳) $\Delta > 0 \rightarrow m^2 - 8m - 48 > 0 \rightarrow (m-12)(m+4) > 0 \rightarrow m = 12, -4 \rightarrow (-\infty, -4) \cup (12, +\infty)$

اشتراک $(-6, -4)$ ✓

	$-\infty$	-4		12	$+\infty$
	+	0	−	0	+

$(-\infty, -4) \cup (12, +\infty)$

(۲)

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$\frac{-b}{a} = \frac{a}{c} \rightarrow a^2 = -bc \rightarrow (2m-1)(m-2) = 9 \rightarrow 2m^2 - 5m - 7 = 0 \rightarrow m = \frac{5 \pm 9}{4} \rightarrow -1, \frac{7}{2}$

$m = -1 \rightarrow 3x^2 - 3x + 2 = 0 \rightarrow x^2 - x + 1 = 0 \rightarrow \Delta = 1 - 4 < 0$ ✗

$m = \frac{7}{2} \rightarrow 3x^2 + 4x - \frac{3}{2} \rightarrow \Delta = 25 > 0$ ✓

(۲)

۴

$S_{\text{جدید}} = x_1^3 + x_2^3 + \frac{1}{x_1} + \frac{1}{x_2} \rightarrow \frac{x_1 + x_2}{x_1 x_2} = \frac{\frac{-b}{a}}{\frac{c}{a}} = \frac{-b}{c} = \frac{-1}{-4} \rightarrow S = \frac{31}{4}$

$S^3 - 3SP = 1 - 12 = -11$

$P_{\text{جدید}} = (x_1^2 + \frac{1}{x_1^2})(x_2^2 + \frac{1}{x_2}) = x_1^2 x_2^2 + x_1^2 + x_2^2 + \frac{1}{x_1 x_2} = -\frac{221}{4}$

$x_1^2 + x_2^2 = 9$, $x_1 x_2 = -\frac{1}{2}$

$x^2 - Sx + P = 0 \rightarrow x^2 - \frac{31}{4}x - \frac{221}{4} = 0$

$4x^2 - 31x - 221 = 0$ ✓

(۲)

۵

$\sqrt[3]{x^4} + 1 + \sqrt[3]{x^2} - \sqrt[3]{x^2} - \frac{1}{\sqrt[3]{x^2}} - 1 - 2\sqrt[3]{x^2} = 0 \rightarrow \sqrt[3]{x^4} - 2\sqrt[3]{x^2} - \frac{1}{\sqrt[3]{x^2}} = 0 \xrightarrow{\times \sqrt[3]{x^2}} x^2 - 2x - 1 = 0$

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

(۲)

نام و نام خانوادگی ...متین حسین‌نژاد... پاسخنامه تشریحی تکلیف شماره ...۲۱۲... کلاس ...B...

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

$(-1,9) \rightarrow a - b + c = 9 \xrightarrow{2a=b} -a + c = 9$

$(3,1) \rightarrow 9a + 3b + c = 1 \quad 18a + c = 1$

$\begin{cases} 18a + c = 1 \\ -a + c = 9 \end{cases} \rightarrow 19a = -8 \rightarrow a = \frac{-1}{2}, b = -1, c = \frac{17}{2}$

$a - c = -9 \rightarrow c = 9 + a = \frac{18}{2} - \frac{1}{2} = \frac{17}{2}$

$y = \frac{-1}{2}x^2 - x + \frac{17}{2}$

۲

① $\frac{c}{a} > 0 \rightarrow \frac{m+4}{2} > 0 \rightarrow m + 4 > 0 \rightarrow m > -4$

② $\frac{-b}{a} > 0 \rightarrow \frac{-m}{2} > 0 \rightarrow -m > 0 \rightarrow m < 0$

③ $\Delta > 0 \rightarrow m^2 - 8m - 48 > 0 \rightarrow (m-12)(m+4) > 0 \rightarrow m = 12, -4 \rightarrow (-\infty, -4) \cup (12, +\infty)$

اشتراک $\rightarrow (-4, 0)$

$-\infty \quad -4 \quad +12 \quad +\infty$

$+ \quad 0 \quad - \quad 0 \quad + \quad (-\infty, -4) \cup (12, +\infty)$

۳

$\frac{-b}{a} = \frac{a}{c} \rightarrow a^2 = -bc \rightarrow (2m-1)(m-2) = 9 \rightarrow 2m^2 - 5m - 7 = 0 \rightarrow m = \frac{+5 \pm 9}{4} \rightarrow \begin{cases} -1 \\ \frac{7}{2} \end{cases}$

$m = -1 \rightarrow 3x^2 - 2x + 3 \rightarrow x^2 - x + 1 = 0 \rightarrow \Delta = 1 - 4 < 0$ ✗

$m = \frac{7}{2} \rightarrow 3x^2 + 4x - \frac{3}{2} \rightarrow \Delta = 40 > 0$ ✓

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$S_{\text{جدید}} = x_1^3 + x_2^3 + \frac{1}{x_1} + \frac{1}{x_2} \rightarrow \frac{\alpha + \beta}{\alpha\beta} = \frac{\frac{-b}{a}}{\frac{c}{a}} = \frac{-b}{c} = \frac{-1}{4} \rightarrow S = \frac{31}{4}$

$S^3 - 3SP = 10 - 12 = -2$

$P_{\text{جدید}} = (x_1^3 + \frac{1}{x^2})(x_2^3 + \frac{1}{x_2}) = x_1^3 x_2^3 + x_1^2 x_2^2 + \frac{1}{x_1 x_2} = \frac{-221}{4}$

$x^2 - Sx + P = 0 \rightarrow x^2 - \frac{31}{4}x - \frac{221}{4} = 0$

$4x^2 - 31x - 221 = 0$

۵

$\sqrt[3]{x^4} + 1 + \sqrt[3]{x^2} - \sqrt[3]{x^2} - \frac{1}{\sqrt[3]{x^2}} - 1 - 2\sqrt[3]{x^2} = 0 \rightarrow \sqrt[3]{x^4} - 2\sqrt[3]{x} - \frac{1}{\sqrt[3]{x^2}} = 0 \xrightarrow{\sqrt[3]{x^2}} x^2 - 2x - 1 = 0$

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

سوال ۶

$\beta = 3\alpha$

$P = \alpha\beta = \alpha \cdot 3\alpha = \frac{4}{3} \to 3\alpha^2 = \frac{4}{3} \to \alpha^2 = \frac{4}{9} \to \alpha = \pm\frac{2}{3}$

$S = \alpha+\beta = \alpha + 3\alpha = 4\alpha = \frac{a}{3} \to 4(\pm\frac{2}{3}) = \frac{a}{3} \to a = \pm 8$

اختلاف دو مقدار a برابر **16** است.

سوال ۷

عرض از مبدا صفر ← از ناحیه سوم نگذرد ← $a>0$ (I)

ریشه ها ← مثبت و صفر

$S>0 \to -\frac{3+2a}{a} > 0 \to \frac{3+2a}{a} < 0 \to$ ($-\frac{3}{2}$, 0 : $+ \mid - \mid +$) $\quad -\frac{3}{2} < a < 0$ (II)

$(I) \cap (II) = \emptyset \to$ **هیچ مقدار a**

سوال ۸

$y = x^2+ax-2 \to x = \frac{-b}{2a} \to x = \frac{-a}{2}$

$y = -x^2-2x+b \to x = \frac{-b}{2a} \to x = \frac{-2}{-2} = -1$

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

$\begin{cases} y = x^2+2x-2 \\ y = 1 \end{cases} \to x^2+2x-3 = 0 \to (x+3)(x-1) = 0$

$\begin{cases} x = 1 \to A(1,1) \\ x = -3 \to B(-3,1) \end{cases} \to 1 = -9+6+b \to b = 4$

$ab = $ **8**

سوال ۹

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

$S = (\alpha+0.5)+(\beta+0.5) = \frac{a}{2} \to \alpha+\beta+1 = \frac{a}{2} \to -\frac{1}{2}+1 = \frac{a}{2} \to a = 1$

$P = (\alpha+0.5)(\beta+0.5) = \alpha\beta + 0.5(\alpha+\beta) + 0.25 = \frac{b}{2}$

$\to -\frac{3}{a} + 0.5(-\frac{1}{2}) + 0.25 = \frac{b}{2} \to b = -6$

$\left[\frac{ab}{4}\right] = \left[\frac{1\times -6}{4}\right] = $ **-2**

سوال ۱۰

$\begin{cases} x^2+6x+m = 0 \\ x^2+2x-3m = 0 \end{cases} \xrightarrow{\text{تفریق}} 4x+4m = 0 \to x = -m \to m^2-6m+m = 0$

$\to m^2-5m = 0 \to \begin{cases} m = 0 \\ m = 5 \end{cases}$

$m = 5 \to \begin{cases} x^2+6x+5 = 0 \to x = -1 \ , \ x = -5 \\ x^2+2x-15 = 0 \to x = 3 \ , \ x = -5 \end{cases}$

اختلاف ریشه ها ← $3-(-1) = $ **4**