$y = x^2 + 1 + 2x$

(۱۴ ، ۵)

علیا توکلیان

Subject:
Year. Month. Date.

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۱- حل در آخر سوال ۱۰

$[\frac{x}{3}] \rightarrow$ صحیح x

(۰)

$y = a(x-\alpha)^2 + \beta$

$y = a(x+1)^2 + 9 \rightarrow 1 = a(2+1)^2 + 9$

$1 = 16a + 9 \longrightarrow -8 = 16a \Rightarrow a = -\frac{1}{2}$

~~$y = -2x^2 - 2 - 4x$~~

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

III $P > 0 \rightarrow \frac{m+4}{2} > 0 \rightarrow m > -4$ -۲

$\Delta > 0$ ✓

$I \cap II \cap III = (-4, -\frac{1}{2})$

$m^2 \overset{\checkmark}{-} 4(2)(m+4) > 0$

$m^2 \overset{\checkmark}{-} 8m - 48 > 0$

$(m-12)(m+4) > 0$

	-۴		۱۲	
	+	۰	-	۰	+

(۰ ، ۵)

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

$\frac{-b}{a} = \frac{a}{c} \Rightarrow \frac{-2m+1}{3} = \frac{3}{2-m}$

(۳-ب)

$9 = -6m + 2m^2 + 2 - m$

$2m^2 - 9m - 7 = 0 \quad \Delta = 81 \quad m = \frac{9 \pm 9}{4} \Rightarrow$

$m = \frac{7}{2}, -1$

Rali

Subject:
Year Month Date

$\Delta > 0$

$(2m-1)^2 - 4(3)(2-m)$

$4m^2 + 8m - 23 > 0$ ⟶ $m = 1 \Rightarrow 4 - 8 - 23 = -27$

$m = \frac{7}{2} \Rightarrow 49 + 28 - 23 = 54$

$x_1 + x_2 = 1 \quad x_1 x_2 = -4$

$y_1 = x_1^3 + \frac{1}{x_2} \quad y_2 = x_2^3 + \frac{1}{x_1}$

$y_1 + y_2 = x_1^3 + \frac{1}{x_2} + x_2^3 + \frac{1}{x_1}$

$(x_1+x_2)^3 - 3x_1x_2(x_1+x_2) =$

$1^3 - 3(-4)(1) = 13$

$\frac{1}{x_1} + \frac{1}{x_2} = \frac{x_1+x_2}{x_1x_2} = \frac{-1}{4}$

$\Rightarrow y_1 + y_2 = \frac{-9}{4}$

$y_1 y_2 = (x_1^3 + \frac{1}{x_2})(x_2^3 + \frac{1}{x_1})$

$x_1^3 x_2^3 + x_1^3 + x_2^3 + \frac{1}{x_1 x_2}$

$(-4)^3 = -64$ $\quad s^2 - 2p = 1 - 2(-4) = 9$ $\quad \frac{1}{x_1 x_2} \rightarrow \frac{1}{p} = \frac{-1}{4}$

Rali

Subject:
Year. Month. Date.

$y_1 y_2 = -64 + 9 - \frac{1}{\varepsilon} = -55 \cdot \frac{1}{\varepsilon} = -\frac{221}{\varepsilon}$

$x^2 - \frac{55}{\varepsilon} x - \frac{221}{\varepsilon} = 0$

۴-۵

$\sqrt[3]{x} = t$

$(t^2 + \frac{1}{t^2} + 1)(t^2 - 1) = 2t$

$t^4 - \frac{1}{t^2} = 2t \rightarrow t^2 \times t^4 - \frac{1}{t^2} - 2t = 0$

$t^6 - 2t^3 - 1 = 0 \rightarrow z^2 - 2z - 1 = 0$

$z = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$

$t^3 = 1 + \sqrt{2}$ ، $t^3 = 1 - \sqrt{2}$

$x = t^3 \Rightarrow x_1 = 1 + \sqrt{2}$ + ⇒ [۲]
$x_2 = 1 - \sqrt{2}$

Rali

Subject
Year Month Date

Sa Su Mo Tu We Th Fr

۲۶

$$\alpha + ۳\alpha = \frac{a}{۳}$$

$$۴\alpha = \frac{a}{۳} \Rightarrow a = ۱۲\alpha$$

$$\alpha \times ۳\alpha = \frac{۴}{۳}$$

$$۳\alpha^۲ = \frac{۴}{۳} \rightarrow \alpha^۲ = \frac{۴}{۹} \Rightarrow \alpha = \pm\frac{۲}{۳}$$

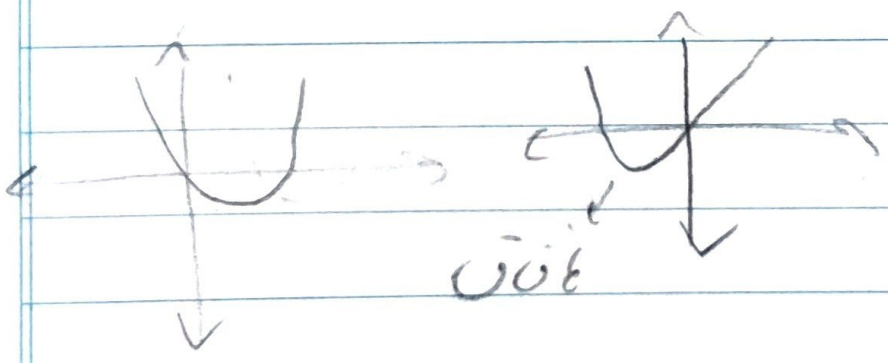
اگر $\alpha = \frac{۲}{۳} \Rightarrow a = ۱۲ \times \frac{۲}{۳} = ۸$

اگر $\alpha = \frac{-۲}{۳} \Rightarrow a = ۱۲ \times \frac{-۲}{۳} = -۸$

$$۸ - (-۸) = ۱۶$$

۲۷

$m > ۰$ I -۷



II ∧ I = ∅

مجموع ۲ ریشه عددی مثبت است

$$\frac{-b}{a} \geq ۰ \rightarrow$$

	$\frac{-۳}{۲}$	۰
	−	+
	+	−

$$\frac{-۳ - ۲a}{a} \geq ۰$$

II ∩ I $= \left(\frac{-۳}{۲}, ۰\right)$

Rafi

Subject:
Year. Month. Date.

Sa Su Mo Tu We Th Fr

۶-۱

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

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

$1 = x^2 + 2x - 2 \rightarrow x^2 + 2x - 3 = 0 \rightarrow$

$(x+3)(x-1) = 0 \quad x = 1, -3$

$y = -x^2 - 2x + b \qquad ab = 2 \times 4 = 1$

$1 = -1 - 2 + b \rightarrow b = 4$

۶-۹

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

$\frac{a}{2} = \frac{-a+2a}{2a} \rightarrow \frac{a}{2} = \frac{a}{2a} \Rightarrow a = 1$

$2x^2 + x - 6 = 0 \rightarrow x^2 + x - 12 = 0 \rightarrow$

$(x+4)(x-3) = 0 \rightarrow x = \frac{-4}{2}, \frac{3}{2}$

$-2 \qquad 1.5$

$\left[\frac{-2 \times 1}{4}\right] = \left[\frac{-6}{4}\right] = -2 \qquad (x^2 - 0/5x - 3)^2 =$

$b = -6$ ← Rali $\qquad 2x^2 - x - 6$

Subject:
Year. Month. Date.

Sa Su Mo Tu We Th Fr

$x^2 + 2x - 3m = x^2 + 6x + m$ (۲۰/۱۰)

$0 = 4x + 4m \rightarrow 4x = -4m \rightarrow x = -m$

$x^2 + 6x + m = 0 \rightarrow$ ضرب $\cdot$ $m = \frac{c}{a}$

$-m \times x = m \rightarrow x = -1$

$x^2 + 2m - 3m = 0 \Rightarrow \frac{c}{a} = -3m \rightarrow$

$-m \times x = -3m \rightarrow x = 3$

$3 \cdot (-1) = \boxed{4}$

$y = ax^2 + bx + c \rightarrow x_s = \frac{-b}{2a} = -1 \rightarrow b = 2a$ از راس

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

$(2, 1) \rightarrow 9a + 3b + c = 1 \xrightarrow{b=2a} 9a + 6a + c = 1 \rightarrow 15a + c = 1$

$\begin{cases} -a + c = 9 \\ 15a + c = 1 \end{cases}$ $\quad 16a = -8 \quad a = \frac{-1}{2}$

$b = 2a = -1$

$c = \frac{17}{2}$

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

Rali