

Subject:

Date:

No:

آئین فرض - تالیف ۲۴

الف) $\text{Min} \left| \begin{array}{l} -\frac{b}{2a} = \frac{5}{2 \times 2} = 1 \\ 2(1)^2 - 4(1) + 1 = -1 \end{array} \right.$

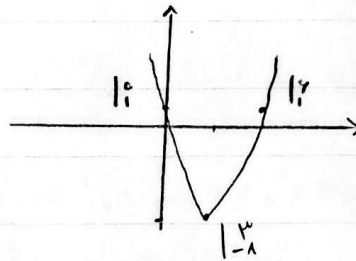
سوال (۱)

ب) $\text{Max} \left| \begin{array}{l} -\frac{b}{2a} = \frac{-3}{-2 \times 2} = \frac{3}{4} \\ \frac{-\Delta}{4a} = \frac{-b^2 + 4ac}{4a} = \frac{-9 + 4(-2)(-1)}{4 \times (-2)} = \frac{31}{-8} \end{array} \right.$

الف) $\text{Min} \left| \begin{array}{l} -\frac{b}{2a} = \frac{4}{2 \times 1} = 2 \\ 1^2 - 4(2) + 1 = -7 \end{array} \right.$

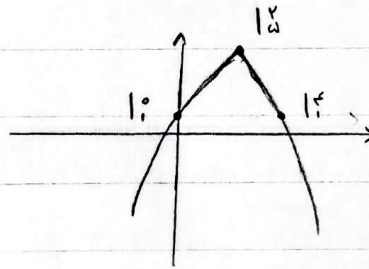
سوال (۲)

نقطه می‌دهیم: $\left| \begin{array}{l} 0 \\ 1 \end{array} \right| \begin{array}{l} 4 \\ 1^2 - 4 \times 2 + 1 = -7 \end{array}$



ب) $\text{Max} \left| \begin{array}{l} -\frac{b}{2a} = \frac{-5}{2(-1)} = 2.5 \\ -1^2 + 4(2) + 1 = 6 \end{array} \right.$

نقطه می‌دهیم: $\left| \begin{array}{l} 0 \\ 1 \end{array} \right| \begin{array}{l} 6 \\ 1 \end{array}$



$$\begin{cases} 4\alpha^3 + k\alpha^2 - 9\alpha - 2 = 0 \\ 4\beta^3 + k\beta^2 - 9\beta - 2 = 0 \end{cases}$$

سوال (۳) $4(\alpha + \beta)(\alpha^2 - \alpha\beta + \beta^2) + k((\alpha + \beta)^2 - 2\alpha\beta) - 9(\alpha + \beta) - 4 = 0$
 $(\alpha + \beta)^3 - 3\alpha\beta$

$$4(\alpha^2 + \beta^2) + k(\alpha^2 + \beta^2) - 9(\alpha + \beta) - 4 = 0$$

$$\hookrightarrow 4(1)(1^2 - 3(-1)) + k(1^2 - 2(-1)) - 9(1) - 4 = 0$$

$$21 + 5k - 9 - 4 = 0 \rightarrow 5k = -14 \rightarrow k = -\frac{14}{5}$$

$$\sqrt{\alpha} - \sqrt{\beta} = 1 \xrightarrow{\text{مربع}} (\sqrt{\alpha} - \sqrt{\beta})^2 = 1^2 \rightarrow \alpha + \beta - 2\sqrt{\alpha\beta} = 1$$

سوال (۴) $S = -\frac{b}{a} = 3m$

$$\rightarrow 3m - 2\sqrt{m} - 1 = 0$$

$$P = \frac{c}{a} = m$$

$$\sqrt{m} = t : 3t^2 - 2t - 1 = 0 \rightarrow t = 1 \checkmark \Rightarrow m = 1$$

(مع ضرب: صفر) $t = \frac{c}{a} = \frac{1}{3} \Rightarrow m = \frac{1}{3}$

$$2x^2 - (1)x - (1) = 0 \quad P = \frac{c}{a} = \frac{-1}{2}$$

dotnote

نقطه تقاطع با محور y: $x=0 \rightarrow y=m$

سوال (5) $S = |m| \times \frac{\sqrt{\Delta}}{|a|} \times \frac{1}{r}$
 اختلاف ریشه

$\Delta = b^2 - 4ac = (m+2)^2 - 4(2)(m) = m^2 + 4m + 4 - 8m = (m-2)^2 \rightarrow \sqrt{\Delta} = \sqrt{(m-2)^2} = |m-2|$

$S = |m| \times \frac{|m-2|}{|2|} \times \frac{1}{2} = \frac{3}{2} \rightarrow |m^2 - 2m| = 3 \rightarrow m^2 - 2m = 3 \rightarrow m^2 - 2m - 3 = 0$
 $(1-3 = -2) \rightarrow m = -1$
 $m = -\frac{c}{a} = 3$

$m^2 - 2m = -3 \rightarrow m^2 - 2m + 3 = 0 \rightarrow \Delta = 4 - 4(1)(3) = -8 < 0$ ندارد

روش اولی

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

$m = 3 \rightarrow y = x^2 - 3x + 1 \rightarrow -\frac{b}{2a} = \frac{3}{2}$

Min $\rightarrow a > 0$ $\frac{-\Delta}{4a} = \frac{-b^2 + 4ac}{4a} = \frac{-3^2 + 4a^2}{4a} = \frac{4a^2 - 9}{4a}$ سوال (6)

$-18 + 4a^2 = 4a \rightarrow 4a^2 - 4a - 18 = 0$

$\Delta = (-4)^2 - 4(4)(-18) = 4^2 + 288 = 292$
 $a_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-(-4) \pm \sqrt{292}}{2 \times 4} = \frac{4 \pm \sqrt{292}}{8}$
 $a = 2$ ✓
 $a = -\frac{9}{4}$ غلط

روش دوم

سوال (7) $\frac{\sqrt{\Delta}}{|a|} = 2 \rightarrow x^2 - (a+1)x + a = 0 \rightarrow \sqrt{(a+1)^2 - 4(1)(a)} = \sqrt{a^2 + 2a + 1 - 4a}$

$= \sqrt{(a-1)^2} = |a-1| = 2$
 $|a-1| = 2 \rightarrow a-1 = 2 \rightarrow a = 3$
 $|a-1| = 2 \rightarrow a-1 = -2 \rightarrow a = -1$

$a = 3 \rightarrow x^2 - 4x + 3 = 0 \rightarrow (x-1)(x-3) = 0 \rightarrow 1, 3$ ✓

$a = -1 \rightarrow x^2 - 1 = 0 \rightarrow (x-1)(x+1) = 0 \rightarrow 1, -1$ غلط (1/1)

$x^2 - (3 \times 3 + 1)x + b = 0 \rightarrow \frac{\sqrt{10^2 - 4(1)(b)}}{1} = \sqrt{100 - 4b} = 2 \rightarrow 100 - 4b = 4 \rightarrow 4b = 96 \rightarrow b = 24$

$P_1 = \frac{c}{a} = \frac{3}{1} = 3$ $P_2 = \frac{c}{a} = \frac{24}{1} = 24$ اختلاف: $24 - 3 = 21$

سوال (8) $y_1 = -ax^2 + ax + 2$ $y_2 = 2bx^2 - bx - 1$ جایهای رأسی بری معادله جدید

$S_1 \left| \begin{array}{l} \frac{b}{2a} = \frac{a}{-2a} = \frac{1}{2} \\ -a(\frac{1}{2})^2 + a(\frac{1}{2}) + 2 = \frac{a}{2} + 2 \end{array} \right.$

$S_2 \left| \begin{array}{l} \frac{-b}{2a} = \frac{b}{2b} = \frac{1}{2} \\ 2b(\frac{1}{2})^2 - b(\frac{1}{2}) - 1 = \frac{b}{2} - 1 \end{array} \right.$

$\frac{a}{2} + 2 = 2b(\frac{1}{2})^2 - b(\frac{1}{2}) - 1 \rightarrow \frac{a}{2} + 2 = -1 \rightarrow a = -12$
 $\frac{b}{2} - 1 = -a(\frac{1}{2})^2 + a(\frac{1}{2}) + 2$

$b - a = (-4) - (-12) = 8$

$\frac{b}{2} - 1 = \frac{3}{2} - 3 + 2 \rightarrow \frac{b}{2} = \frac{3}{2}$
 $b = 3$



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$$\begin{aligned} \gamma \omega \alpha \beta^r + \kappa \beta + \beta &= 0 \rightarrow \omega \beta (\omega \alpha \beta + 1) = 0 \\ \gamma \omega \alpha^r + \kappa \alpha + \beta &= 0 \end{aligned}$$

(9 سوال)

① $\beta = 0 \rightarrow \alpha (\gamma \omega \alpha^r + \kappa) = 0 \rightarrow \alpha = 0$ قوی

② $\beta = -\omega \alpha \rightarrow \alpha (\gamma \omega \alpha^r - 1) = 0 \rightarrow \alpha (\omega \alpha - 1)(\omega \alpha + 1) = 0$

$$\left\{ \begin{array}{l} \alpha = 0 \text{ قوی} \\ \alpha = \frac{1}{\omega} \rightarrow \beta = -1 \text{ قوی} \\ \alpha = -\frac{1}{\omega} \rightarrow \beta = 1 \checkmark (\alpha < \beta) \end{array} \right.$$

$$y = -\omega x^r + \kappa x + 1 \quad S \left| \begin{array}{l} \frac{-b}{r\alpha} = \frac{-\kappa}{-r} = +\frac{\kappa}{r} \\ -\omega \left(+\frac{\kappa}{r}\right)^r + \kappa \left(+\frac{\kappa}{r}\right) + 1 = \frac{9}{\omega} \end{array} \right. \text{اصول}$$

$$S = \frac{-b}{a} \rightarrow a + b = a^r + b^r - 1r \rightarrow a^r + b^r - a - b - 1r = 0$$

(10 سوال)

$$(a+b)^r - rab - (a+b) - 1r = 0$$

$$P = \frac{c}{a} \rightarrow ab = a + b - 1$$

$$(a+b)^r - r(a+b-1) - (a+b) - 1r = 0 \xrightarrow{a+b=x} x^r - rx - 1 = 0$$

$$(x-1)(x+1) = 0 \rightarrow \begin{cases} x = 1 \checkmark (a, b \in \mathbb{N}) \\ x = -2 \text{ قوی} \end{cases}$$

$$\underline{a+b = 1}$$