

Subject :

کتاب ۲

جواب

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Year :

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دستان دوم

هستی نصیری نرگس

الف) $y = 2x^2 - 4x + 1 \rightarrow \text{ext}$ $\left| \begin{array}{l} -\frac{b}{2a} \rightarrow \frac{4}{4} = 1 \\ \frac{-\Delta}{4a} \rightarrow \frac{-(14 - 4 \times 2 \times 1)}{4 \times 2} = -1 \end{array} \right.$

سوال ۱

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ب) $y = -2x^2 + 3x - 5 \rightarrow \text{ext}$ $\left| \begin{array}{l} -\frac{b}{2a} \rightarrow \frac{-3}{-4} = \frac{3}{4} \\ \frac{-\Delta}{4a} \rightarrow \frac{-(9 - 4 \times 2 \times -5)}{4 \times -2} = \frac{31}{-4} = -\frac{31}{4} \end{array} \right.$

سوال ۲

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الف) $y = x^2 - 4x + 1$ $f_{\text{min}} = \frac{+4 \pm \sqrt{16 - 4 \times 1 \times 1}}{2} = 2 \pm 2\sqrt{2}$

$a \rightarrow 1, 1 > 0 \rightarrow \text{min}$

$\text{ext} \left| \begin{array}{l} -\frac{b}{2a} = \frac{-(-4)}{2} = 2 \\ -1 \end{array} \right.$

ب) $y = -x^2 + 4x + 1$ $f_{\text{max}} = \frac{-4 \pm \sqrt{16 - 4 \times (-1) \times 1}}{2 \times (-1)} = \frac{-4 \pm 2\sqrt{2}}{-2} = \frac{4 \pm 2\sqrt{2}}{2} = 2 \pm \sqrt{2}$

$a \rightarrow -1, a < 0 \rightarrow \text{max}$

$\text{ext} \left| \begin{array}{l} -\frac{b}{2a} = \frac{-4}{-2} = 2 \\ a \end{array} \right.$

سوال ۳

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$\frac{\alpha\beta}{p} = -2, \quad \frac{\alpha+\beta}{s} = 1, \quad f(x) = kx^2 + 9x - 2 = 0$

$x^2 - 5 + p = x^2 - x - 2 \rightarrow (x^2 - x - 2)(\epsilon x + a) = \epsilon x^3 + \epsilon x^2 - 9x - 2$

$\rightarrow \epsilon x^3 + \epsilon^2 x^2(-\epsilon + a) + x(-1 - a) - 2a \rightarrow \epsilon x^3 + \epsilon x^2 - 9x - 2$

$\rightarrow -2a = -2 \rightarrow a = 1 \quad -1 + \alpha = -3 \rightarrow k = -3$

$x^2 - 3mx + m = 0 \quad (\sqrt{a} - \sqrt{b})^2 = (1)^2 \rightarrow \alpha + \beta - 2\sqrt{a \cdot b} = 5 - 2\sqrt{p}$

$\rightarrow 3m - 2\sqrt{m} - 1 = 0 \rightarrow 3t^2 - 2t - 1 = 0 \rightarrow 3 - 2(3)(-1) = 14$

$\rightarrow \frac{2 \pm \sqrt{14}}{3} \rightarrow 1 \rightarrow \sqrt{1} = 1 \checkmark$

$\rightarrow \frac{-1}{3} \rightarrow \sqrt{-\frac{1}{3}} \checkmark$

سوال ۴

$2x - x - 1 = 0 \quad \frac{-1}{3} \times 1 = -\frac{1}{3}$

$x = 1 \quad c = -\frac{1}{3}$

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$$y = 2x^2 - (m+2)x + m = 0 \xrightarrow{a+b+c=0} x=1, \frac{m}{1}$$

$$y(0) = m = -\frac{1}{2} \cdot \frac{2}{1} = -1$$

$$\rightarrow S = \frac{1}{2} \left| m \left(\frac{m}{2} - 1 \right) \right|$$

$$\rightarrow \left| m \left(\frac{m}{2} - 1 \right) \right| = \frac{2}{2} \rightarrow \left| m(m-2) \right| = 2 \rightarrow m=2 \rightarrow \frac{m}{2} = \frac{2}{2} = 1$$

$$y = ax^2 + 3x + a \quad \text{ext} \left| \begin{array}{l} -\frac{b}{2a} = -\frac{3}{2a} \\ -\frac{\Delta}{4a} = \frac{9-4a^2}{4a} \end{array} \right. \rightarrow \frac{-(b^2-4ac)}{4a} = \frac{-9+4a^2}{4a} = \frac{1}{a}$$

$$2 \Delta a = -9 + 4a^2 \quad \div 1 \rightarrow \Delta a^2 - 9a - 11 = 0 \rightarrow a^2 - 9a - 11 = 0$$

$$(a+9)(a-14) = 0$$

$$a = \frac{-9}{1} \rightarrow \text{O O E } a > 0 \rightarrow \min \quad a = \frac{14}{1} = 14$$

$$x^2 - (a+1)x + a = 0 \rightarrow 2k+1, 2k-1 \rightarrow S = \frac{-b}{a} \rightarrow (a+1) \rightarrow 2k+1 + 2k-1 = a+1$$

$$P = \frac{c}{a}, a \rightarrow (2k+1)(2k-1) = a$$

$$k=0 \rightarrow \text{O O E } \left(\begin{array}{l} k=0 \\ k=1 \end{array} \right) \checkmark$$

$$k^2 - 1 = k^2 - 1 = a$$

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

$$2 \times 2 = 4 = b = P = 2(2+2) = b \rightarrow 2=1 \rightarrow 2=2$$

$$y = ax^2 + ax + 2 \rightarrow \text{ext} \left(\frac{1}{2}, \frac{a^2 + 4a}{4a} \right)$$

$$y = 2bx^2 - bx - 1 \rightarrow \text{ext} \left(\frac{1}{4}, \frac{b^2 + 4b}{-16} \right)$$

$$2b \left(\frac{1}{4} \right) - b \left(\frac{1}{4} \right) - 1 = \frac{a}{2} + 2 \rightarrow \frac{a}{2} = -3 \rightarrow a = -6$$

$$\frac{-a}{14} + \frac{a}{2} + 2 = \frac{-b}{16} - 1 \rightarrow \frac{12}{14} = \frac{-b}{16} \rightarrow b = -4$$

$$b - a = -4 - (-6) = 2$$



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$$\alpha \cdot \beta = \frac{B}{A} \rightarrow y = -\omega x^2 + \epsilon x + 1$$

سوال 9 نامہ اول

$$\alpha = \frac{1}{a}$$

$$\alpha + \beta = -\frac{\epsilon}{A} \rightarrow \frac{1}{a} = \beta = -\frac{\epsilon}{a} - \frac{1}{a} = -1 \quad \alpha < \beta$$

$$-\frac{1}{a} = \beta = \frac{\epsilon}{0} + \frac{1}{a} = 1 \quad \checkmark$$

مثال

$$\frac{\frac{\epsilon}{10}}{\frac{12+20}{20}} = \frac{\frac{34}{20}}{\frac{20}{20}}$$

نامہ اول

$$ax^2 + bx + c = 0 \quad s = -\frac{b}{a} \quad p = \frac{c}{a}$$

سوال 10

$$a + b = a^2 + b^2 - 12 \rightarrow s = s^2 - 2p - 12 \rightarrow s^2 - 2s + 2 - 12$$

$$a \cdot b = a + b - 1 \rightarrow p = s - 1$$

$$s^2 - 3s - 10 = 0$$

$$(s - 5)(s + 2) = 0$$

$$s = 5, s = -2$$

چون α و β اعداد طبیعی ہیں

$$s = 5$$

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