

باز دهم سپر

عالم نوشتار!

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معین تهری

تکلیف شماره ۳

$$y = (a-1)x^2 + x + 3$$

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

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$$\Rightarrow y = -\frac{1}{2}x^2 + x + 3$$

$$\Rightarrow x = \frac{-1 \pm \sqrt{1}}{-1} \rightarrow \begin{cases} + \rightarrow (-2) \\ - \rightarrow (6) \end{cases}$$

$$\Rightarrow x = 4$$

$$f(x) = mx^2 - \omega x + m$$

x	x	x
f(x)	-	+

$$\begin{cases} \text{چون مربع } x^2 \text{ منفی نیست} \\ m < 0 \end{cases} \rightarrow m < 0 \quad I$$

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$$\begin{cases} \text{چون مربع } x^2 \text{ مثبت است} \\ \Delta > 0 \end{cases} \rightarrow 2\omega - \varepsilon m^2 > 0 \rightarrow -\frac{\omega}{\varepsilon} < m < \frac{\omega}{\varepsilon} \quad II$$

$$\Rightarrow I \cap II \Rightarrow m \in \left(-\frac{\omega}{\varepsilon}, 0\right)$$

$$\begin{aligned} m^2 - \frac{\omega}{\varepsilon} < 0 \\ (m - \frac{\omega}{\varepsilon}) / (m + \frac{\omega}{\varepsilon}) < 0 \\ \frac{-\frac{\omega}{\varepsilon}}{+\frac{\omega}{\varepsilon}} \quad - \quad \frac{\omega}{\varepsilon} \end{aligned}$$

$$x = \frac{3 \pm \sqrt{\omega}}{2}$$

$$\Rightarrow (x - \frac{3 + \sqrt{\omega}}{2})(x - \frac{3 - \sqrt{\omega}}{2}) = 0 \Rightarrow x^2 + (-\frac{3}{2})x + \frac{9 - \omega}{4}$$

$$\Rightarrow x^2 - 2x + \frac{\varepsilon}{9} \xrightarrow{\times 9} 9x^2 - 18x + \varepsilon$$

$$\alpha < \beta \quad 2x^2 - 18x + m + 2 = 0 \quad 3\alpha^2 + \beta^2 = 12 \quad m = ?$$

$$\alpha + \beta = \frac{-b}{a} = \frac{1}{2} = \varepsilon \rightarrow \beta = \varepsilon - \alpha$$

$$\rightarrow 3\alpha^2 + \beta^2 \rightarrow 3\alpha^2 + (\varepsilon - \alpha)^2 = 12 \rightarrow \varepsilon\alpha^2 - 2\alpha + 1 = 0 \xrightarrow{\div \varepsilon} \alpha^2 - 2\alpha + 1 = 0$$

$$\Rightarrow \beta = \varepsilon - \alpha = 1 - 1 = 0 \rightarrow \alpha = 1$$

$$\rightarrow (\alpha - 1)^2 = 0 \rightarrow \alpha = 1$$

$$\frac{c}{a} = \frac{m+2}{2} = 3 \rightarrow m+2 = 6 \rightarrow m = 4$$

باز هم $\sim$

میں نصی

تکلیف نماہ ۱۳

$$C^1 \rightarrow (x, y) \rightarrow (h, k)$$

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$$\Rightarrow a(x-h)^2 + k \xrightarrow[y=\omega]{x=0} \omega = a(0-h)^2 + k \Rightarrow -\epsilon = \epsilon a$$

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$$\boxed{a = -1}$$

$$\Rightarrow y = -1(x-h)^2 + k \Rightarrow y = -x^2 + \epsilon x - \epsilon + k \rightarrow -x^2 + \epsilon x + \omega > 0$$

$$\Rightarrow -x^2 - \epsilon x - \omega < 0 \rightarrow (x-\omega)(x+1) < 0$$

$$\frac{-1 \quad \omega}{+ \quad | \quad - \quad | \quad +}$$

$$\Rightarrow \boxed{x \in (-1, \omega)} \checkmark$$

$$\alpha, \beta \quad a x^2 - \sqrt{x} + 9\beta = 0 \quad \beta > 0 \quad \frac{1}{\alpha} + \frac{1}{\beta}$$

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$$\alpha + \beta = -\frac{b}{a} = \frac{\sqrt{x}}{a}$$

$$\alpha\beta = \frac{c}{a} \sim \frac{9\beta}{\alpha} \rightarrow \alpha\beta = \frac{9\beta}{\alpha} = \alpha^2 = 9 \rightarrow \alpha = \pm 3$$

$$\Rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{1}{-3} + \frac{\sqrt{x}}{9} = \left(\frac{\sqrt{x}}{9}\right) \checkmark$$

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$$\alpha, \beta \quad x^2 + mx - 2m = 0 \quad \alpha^2 - m\beta = 1$$

$$\xrightarrow[x=0]{x=\beta} \beta^2 + \beta m - 2m = 0 \rightarrow -m\beta = \beta^2 - 2m$$

$$\Rightarrow \alpha^2 + \beta^2 - 2m = 1 \rightarrow 5^2 - 2\beta - 2m = 1 \Rightarrow m^2 + \epsilon m - 2m - 1 = 0$$

$$m^2 + \epsilon m - 1 = 0$$

$$\Rightarrow x^2 + \epsilon x - \epsilon = 0$$

$$(m+\epsilon)(m-2) = 0$$

$$m \xrightarrow[-\epsilon]{\text{discriminant}} \Delta < 0 \text{ , } \Delta > 0$$

$$\alpha + \beta = -\frac{b}{a} = (-2) \checkmark$$

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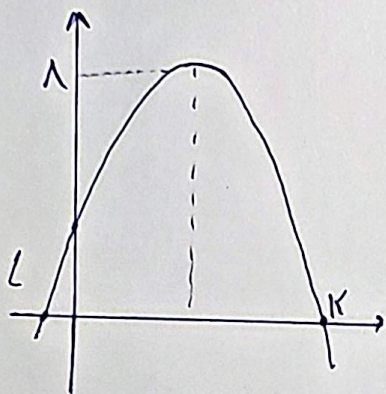
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B. بازدهی

معین نصری

تلف نهاده

$$f(x) = mx^2 + \epsilon x + \frac{m}{r} + V$$



$$x_s = -\frac{b}{2a} = -\frac{\epsilon}{2m} \rightarrow x_s = -\frac{r}{m}$$

$$\frac{x_s = -\frac{r}{m}}{y_s = \lambda} \rightarrow m\left(-\frac{r}{m}\right)^2 + \epsilon\left(-\frac{r}{m}\right) + \frac{m}{r} + V = \lambda$$

$$\frac{\epsilon}{m} - \frac{\lambda}{m} + \frac{m}{r} + V = \lambda$$

$$x'm \rightarrow \lambda - \lambda + m^2 + \epsilon m = 14m$$

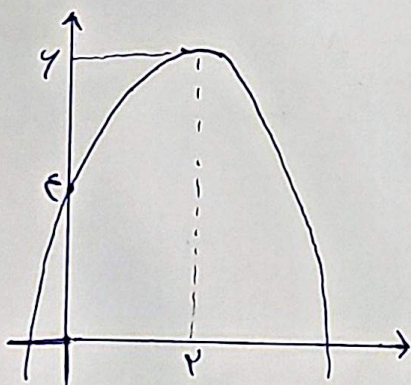
$$m^2 - 2m - \lambda = 0$$

$$(m - \epsilon)(m + 2) = 0 \rightarrow \begin{cases} m = -2 \\ m = \epsilon \end{cases} \xrightarrow{\text{max}} m = -2$$

$$\Rightarrow f(x) = -2x^2 + \epsilon x + 4$$

$$y=0 \rightarrow x \in \left[-\frac{1}{r}\right] \Rightarrow K > L \Rightarrow \boxed{K=2} \checkmark$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = ?$$



$$y = a(x-h)^2 + k \rightarrow y = a(x-r)^2 + 4$$

$$\frac{x=0}{y=\epsilon} \rightarrow \epsilon = \epsilon a + 4 \rightarrow \boxed{a = -\frac{1}{r}}$$

$$y = -\frac{1}{r}(x-r)^2 + 4 \rightarrow -\frac{1}{r}x^2 + 2x - r + 4$$

$$-\frac{1}{r}x^2 + 2x + \epsilon = 0$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{5}{p} = \frac{r}{-1} = \boxed{-\frac{1}{r}} \checkmark$$

$$x^r(\epsilon a + \epsilon)x + (ra^r + \gamma a + r) = 0$$

$$\underline{x=r} \rightarrow \epsilon - \lambda a - \lambda + ra^r + \gamma a + r = 0 \Rightarrow ra^r - ra - 1 = 0 \begin{cases} a=1 \\ a=-\frac{1}{r} \end{cases}$$

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$$a \rightarrow 1 \Rightarrow \begin{cases} xr = 4 \\ \text{الحل: } \underline{xr=4} \end{cases}$$

$$a \rightarrow -\frac{1}{r} \Rightarrow \begin{cases} xr = -\frac{r}{r} \\ \underline{xr = -1} \end{cases}$$

$$\textcircled{a=1} \rightarrow x_1 + xr = \epsilon a + \epsilon \rightarrow x_1 + xr = \lambda \rightarrow \boxed{xr = 4} \checkmark$$

$$\textcircled{a=-\frac{1}{r}} \rightarrow x_1 + xr = \epsilon a + \epsilon \rightarrow x_1 + xr = -\frac{\lambda}{r} \rightarrow \boxed{xr = -\frac{r}{r}} \checkmark$$