

Subject :

گروه دستیار B

مسابقات

۲۰

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

محور (ن)

$$\frac{-1}{2(a-1)} = 2 \rightarrow 2a - 2 = -1 \rightarrow 2a = 1 \rightarrow a = \frac{1}{2}$$

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

$$\Delta = 1 - 4\left(-\frac{1}{2}\right)2 = 5 > 0 \rightarrow x = \frac{-1 \pm \sqrt{5}}{2\left(-\frac{1}{2}\right)}$$

$$x = \frac{-1 \pm \sqrt{5}}{-1} \rightarrow x = 1 \pm \sqrt{5}$$

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

$$\begin{array}{c|cc} & x_1 & x_2 \\ \hline & - & + \end{array}$$

$m < 0$ (چون در رسم مخالف علامت است)

$$\Delta > 0 \rightarrow 2a - 4m^2 > 0 \rightarrow 2a > 4m^2$$

$$m^2 < \frac{2a}{4} \rightarrow |m| < \frac{\sqrt{2a}}{2} \rightarrow -\frac{\sqrt{2a}}{2} < m < \frac{\sqrt{2a}}{2}$$

$$(m < 0) \cap \left(-\frac{\sqrt{2a}}{2} < m < \frac{\sqrt{2a}}{2}\right) \rightarrow \boxed{-\frac{\sqrt{2a}}{2} < m < 0}$$

$$S = \alpha + \beta = \frac{r - \sqrt{a}}{r} + \frac{r + \sqrt{a}}{r} = \frac{r}{r} = 1$$

$$P = \alpha \times \beta = \left(\frac{r - \sqrt{a}}{r} \right) \left(\frac{r + \sqrt{a}}{r} \right) = \frac{r^2 - \sqrt{a}^2}{r^2} = \frac{r^2 - a}{r^2} = \frac{r^2 - k}{r^2}$$

$$x^2 - Sx + P = 0 \rightarrow x^2 - 1x + \frac{r^2 - k}{r^2} = 0 \xrightarrow{\times r^2}$$

$$\boxed{r^2 x^2 - rx + r^2 - k = 0}$$

5)

$$\gamma \alpha^2 - \lambda \alpha + m + \gamma = 0$$

$$\gamma \alpha^2 + \beta^2 = 1 \gamma \quad (*)$$

$$S = \alpha + \beta = \frac{1}{\gamma} = \gamma$$

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

$$p = \alpha \beta = \frac{m + \gamma}{\gamma}$$

$$\gamma \alpha^2 - \lambda \alpha + m + \gamma = 0 \rightarrow$$

$$\gamma \alpha^2 = \lambda \alpha - m - \gamma \quad *$$

$$\gamma \alpha^2 + \beta^2 = 1 \gamma \rightarrow \underbrace{\gamma \alpha^2}_{*} + \underbrace{\alpha^2 + \beta^2}_{S^2 - 2p} = 1 \gamma \quad \xrightarrow{*}$$

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$$\lambda \alpha - m - \gamma + (\gamma)^2 - \gamma \left(\frac{m + \gamma}{\gamma} \right) = 1 \gamma \rightarrow$$

$$\lambda \alpha - m - \gamma + 1 \gamma - m - \gamma = 1 \gamma \rightarrow \lambda \alpha - 2m = 0 \rightarrow$$

$$m = \gamma \alpha$$

$$\xrightarrow{*} \gamma \alpha^2 - \lambda \alpha + \gamma \alpha + \gamma = 0 \rightarrow \gamma \alpha^2 - \gamma \alpha + \gamma = 0$$

$$\xrightarrow{\div \gamma} \alpha^2 - \alpha + 1 = 0 \rightarrow (\alpha - 1)^2 = 0 \rightarrow \alpha = 1$$

$$\Rightarrow \boxed{m = \gamma} \quad \text{جواب}$$

$$S(2, 9) \quad C=5 \quad y = ax^2 + bx + c = 5$$

$$\frac{\partial}{\partial x} x = -\frac{b}{2a} = 2 \rightarrow ka + b = 0$$

$$(2, 9) \rightarrow 9 = ka + 2b + \cancel{c} \rightarrow ka + 2b = k$$

$$\begin{cases} ka + b = 0 \\ ka + 2b = k \end{cases}$$

$$b = k$$

$$ka + k = 0 \rightarrow a = -1$$

$$y = -x^2 + kx + 5 \Rightarrow x = -1$$

$$x = 5$$

$$\begin{array}{r|rr} & -1 & 5 \\ y & -1 & +5 & - \end{array}$$

دریافته $(-1, 5)$ یعنی بالا محور x است. (و طاعت)

Subject

Date ... / ... / ...

-4

$$\alpha x^2 - Vx + 9\beta = 0$$

$$\alpha \times \beta = p = \frac{c}{a} \rightarrow \alpha \times \beta = \frac{9\beta}{\alpha} \rightarrow \alpha^2 = 9 \rightarrow$$
$$\alpha = 3 \quad \text{or} \quad \alpha = -3$$

$$\alpha + \beta = S = \frac{-b}{a} \rightarrow \alpha + \beta = \frac{-V}{\alpha}$$

گفته بر حسب $\alpha = 3 \rightarrow \beta = \frac{-V}{3} - 3 = \frac{-V-9}{3}$

$$\Rightarrow \alpha = -3 \rightarrow \beta = \frac{-V}{-3} + 3 = \frac{V+9}{3}$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = -\frac{1}{3} + \frac{2}{3} = \frac{1}{3} \quad \text{جواب}$$

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

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

$$\frac{c}{a} = \alpha\beta = -2m$$

دالة $\alpha \rightarrow \alpha^2 + m\alpha - 2m = 0 \rightarrow$
 $\alpha^2 = -m\alpha + 2m (*)$

من $\alpha^2 - m\beta = 1 (*) \rightarrow -m\alpha + 2m - m\beta = 1$

$$\rightarrow -m(\alpha + \beta) + 2m = 1 \rightarrow$$

$$-m(-m) + 2m - 1 = 0 \rightarrow$$

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

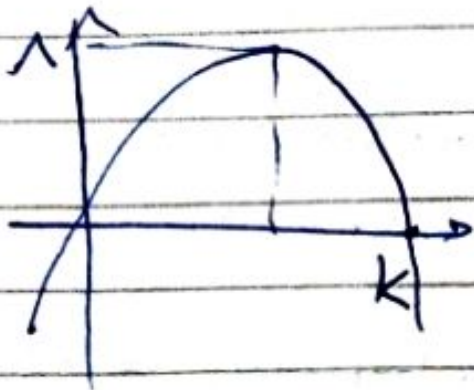
$(m+1)(m-2)$ $\Delta < 0 \times$

$$\boxed{m=2} \rightarrow x^2 + 2x - 4 = 0 \checkmark$$

$$\Rightarrow \boxed{S = -m = -2} \quad \text{جواب}$$

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$$f(x) = mx^2 + kx + \frac{m}{r} + V \quad - \Lambda$$



$$x = -\frac{k}{2m} = -\frac{r}{m}$$

$$y = m\left(-\frac{r}{m}\right)^2 + k\left(-\frac{r}{m}\right) + \frac{m}{r} + V$$

$$y = \frac{r}{m} - \frac{1}{m} + \frac{m}{r} + V = -\frac{r}{m} + \frac{m}{r} + V$$

$$\rightarrow -\frac{r}{m} + \frac{m}{r} + V = \Lambda \rightarrow -\frac{r}{m} + \frac{m}{r} = 1 \xrightarrow{\times m}$$

$$m^2 - rm - \Lambda = 0 \rightarrow m = r$$

$(m-r)(m+r)$
 $\rightarrow m = -r$

حول سهم و به باش
 اعت و $a = m$
 بین m باید منفی
 باشد

$$\rightarrow y = -2x^2 + kx + 4$$

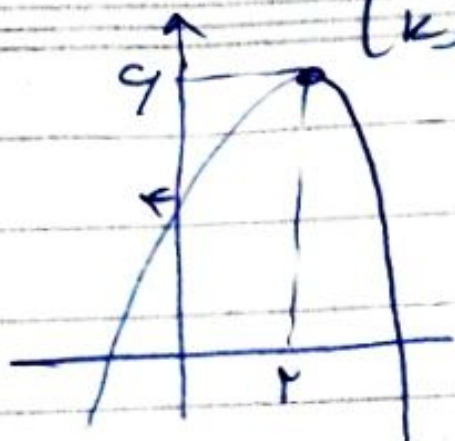
$$y = 0 \rightarrow x = -1$$

$$\rightarrow x = 3$$

$$\Rightarrow k = 8$$

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

$$\begin{bmatrix} h \\ k \end{bmatrix} = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$$



$$y = a(x-h)^2 + k$$

-9

$$y = a(x-2)^2 + 4$$

$$\begin{bmatrix} 0 \\ 4 \end{bmatrix}$$

$$4 = a(0-2)^2 + 4$$

$$4 = 4a + 4 \rightarrow a = -\frac{1}{2}$$

$$y = -\frac{1}{2}(x-2)^2 + 4 = 0 \rightarrow -\frac{1}{2}(x-2)^2 = -4 \rightarrow$$

$$(x-2)^2 = 8 \rightarrow x-2 = \sqrt{8} \rightarrow x_1 = 2 + 2\sqrt{2}$$

$$\rightarrow x-2 = -\sqrt{8} \rightarrow x_2 = 2 - 2\sqrt{2}$$

$$\frac{1}{x_1} + \frac{1}{x_2} = \frac{x_1 + x_2}{x_1 x_2} = \frac{4}{2^2 - (2\sqrt{2})^2} = \frac{4}{4 - 8} = -\frac{1}{2}$$

$$\boxed{-\frac{1}{2} = \text{جواب}}$$

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$$x^y - (1a+1)x + (1a^y + 4a + 1) = 0 \quad -10$$

$$\beta = x = y \rightarrow 1 - 1a - 1 + 1a^y + 4a + 1 = 0 \rightarrow$$

$$1a^y - 1a - 1 = 0 \rightarrow a = 1 \rightarrow x^y - 1x + 1 = 0$$

$$\rightarrow a = \frac{-1}{1} \rightarrow \text{or } 3 = 1a = \frac{c}{a} = 1 \rightarrow \boxed{\alpha = 1}$$

$$x^y - \frac{1}{1}x + \frac{1}{1} = 0$$

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