

یازدهم به B

تکلیف شماره ۱۴

۲۰ افزین!

اسیر محمد مجتبیائی

$$y = -x^2 + bx + 3 \rightarrow y_s = 3$$

(۲)

Part / $x_s = \frac{-b}{2a}$

$$y_s = -\frac{\Delta}{4a} = 3, \Delta = b^2 - 4ac, \frac{-b^2 + 4ac}{4a} \xrightarrow{a=-1, c=3} \frac{-b^2 - 12}{-4} = 3 \rightarrow y_s = 3$$

$$\frac{-b^2 - 12}{-4} = 3 \rightarrow \frac{b^2 + 12}{4} = 3 \rightarrow b^2 + 12 = 12$$

$$b^2 = 0 \rightarrow b = 0 \checkmark$$

$$b = 3 \Rightarrow y = -x^2 + 3x + 3 \xrightarrow{x_s} x_s = \frac{-b}{2a} \rightarrow \frac{-3}{-2} = 1.5 \rightarrow y = -(1.5)^2 + 3(1.5) + 3 = 3.75$$

$$b = -3 \Rightarrow y = -x^2 - 3x + 3 \xrightarrow{x_s} x_s = \frac{-b}{2a} \rightarrow \frac{3}{-2} = -1.5 \rightarrow y = -(-1.5)^2 - 3(-1.5) + 3 = 3.75$$

همه مقدار در دست است. $b = \pm 3$

الف) $f(m) = at^2 + bt + c$ $\xrightarrow{a=1, b=2, c=3} t^2 + 2t + 3 = 0$ $\Delta = b^2 - 4ac \rightarrow 4 - 12 = -8 < 0$ $\Delta < 0$ (۲) (۲)

میان جواب ندارد. $\checkmark$

ب) $f(m) = (t - 1)^2 - 2(t - 1) - 10$

$$t^2 - 2t = 10 \rightarrow t^2 - 2t - 10 = 0 \rightarrow (t + 3)(t - 5) = 0 \rightarrow t = -3, t = 5$$

$$t = 5 \rightarrow f(5) = 10 \rightarrow m = \pm \sqrt{10} \checkmark$$

$$t = -3 \rightarrow f(-3) = -10 \rightarrow m = -1 \times$$

$$\Rightarrow m = +\sqrt{10}, m = -\sqrt{10}$$

$$x^2 - 14x + m = 0 \rightarrow m_1 = \alpha, m_2 = \beta \rightarrow \alpha + \beta = -\frac{b}{a} = \frac{14}{1} = 14 \quad (۲)$$

$$\alpha = \beta + 2 \rightarrow \alpha + \beta = 14 \rightarrow \beta + 2 + \beta = 14 \rightarrow 2\beta = 12 \rightarrow \beta = 6 \quad (۲)$$

$$\alpha = \beta + 2, \alpha = 3 \rightarrow \alpha\beta = 1 \times 3 = \frac{m}{1} \rightarrow \boxed{m = 3} \quad \boxed{\alpha = 3} \quad \boxed{\beta = 1} \checkmark$$

$$\begin{aligned}
 & m^2 - 4m + m - 1 = 0 \quad \begin{cases} \alpha + \beta = 4 \\ \alpha\beta = -1 \end{cases} \Rightarrow \alpha + \beta = -\frac{b}{a} = \frac{4}{1} = 4 \quad (r) \quad (f) \\
 & \alpha\beta = \frac{c}{a} = \frac{m-1}{1} \\
 & \alpha - \beta = r, \quad \alpha + \beta = 4 \Rightarrow \begin{cases} \alpha - \beta = r \\ \alpha + \beta = 4 \end{cases} \Rightarrow \begin{aligned} & \alpha - \beta = r \\ & \alpha + \beta = 4 \end{aligned} \\
 & \alpha\beta = 0 \Rightarrow r = 0 = \frac{m-1}{1} \Rightarrow m - 1 = 0 \\
 & \boxed{m = 1} \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 & -m^2 + 5m + m^2 - r = 0 \xrightarrow{\text{Isolate } \alpha} \alpha = \frac{1}{\beta} \quad \begin{cases} \alpha\beta = \frac{m^2 - r}{-m} \\ \alpha + m = \frac{r}{m} \end{cases} \quad (r) \quad (c) \\
 & \alpha\beta = \frac{m^2 - r}{-m} \xrightarrow{\alpha = \frac{1}{\beta}} \frac{1}{\beta} \cdot \beta = \frac{m^2 - r}{-m} \Rightarrow -m = m^2 - r \Rightarrow m^2 + m - r = 0 \\
 & m^2 + m - r = 0 \Rightarrow (m-1)(m+r) = 0 \quad \begin{cases} m = 1 \Rightarrow -m^2 + 5m - 1 = 0 \quad \checkmark \\ m = -r \Rightarrow r^2 + 5r + r = 0 \Rightarrow r^2 + 6r = 0 \Rightarrow r(r+6) = 0 \end{cases} \\
 & \boxed{m = 1} \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 & m^2 - m^2 + r = 0 \quad \begin{cases} \alpha + \beta = -\frac{b}{a} = \alpha + \beta = m \\ \alpha\beta = \frac{c}{a} = \frac{r}{1} \Rightarrow \alpha\beta = r \end{cases} \quad (r) \quad (y) \\
 & \alpha\beta = r \Rightarrow \alpha\beta = r \\
 & (\alpha\beta)\beta = r \quad \alpha\beta = r \quad \beta = r \quad \boxed{\beta = \frac{r}{1}} \quad \alpha = \left(\frac{r}{1}\right)^r = r \Rightarrow \frac{14}{9} = r \\
 & \alpha\beta = \frac{r}{1} = \frac{9}{14} = \frac{14 \cdot r}{14} = \frac{r^2}{14} \quad \alpha + \beta = m \quad \boxed{m = \frac{r^2}{14}} \quad \checkmark \quad \begin{aligned} & \alpha = \frac{r = 9}{14} \\ & \boxed{\alpha = \frac{9}{14}} \end{aligned}
 \end{aligned}$$

$$\begin{aligned}
 & m^2 - 5m + m = 0 \quad \begin{cases} \alpha + \beta = -\frac{b}{a} = 5 \\ \alpha\beta = m \end{cases} \quad (r) \quad (v) \\
 & \alpha = 5\beta \quad \alpha + \beta = 5 \Rightarrow 5\beta + \beta = 5 \Rightarrow 6\beta = 5 \Rightarrow \beta = \frac{5}{6} \\
 & \alpha = 5\left(\frac{5}{6}\right) = \frac{25}{6} \Rightarrow \alpha = \frac{25}{6} \Rightarrow \alpha\beta = \frac{25}{6} \cdot \frac{5}{6} = \frac{125}{36} = m \\
 & \boxed{m = \frac{125}{36}} \quad \checkmark
 \end{aligned}$$

$$m^2 - 7m + 159 < \begin{cases} \text{ریشه ی اول} = 9 \\ \text{ریشه ی دوم} = 9 \end{cases}$$

$$\Rightarrow \begin{aligned} \alpha + \beta &= -\frac{b}{a} = 7 \\ S &= 7 \\ \alpha\beta &= \frac{c}{a} = 159 \Rightarrow \alpha\beta = 159 \div 7 \Rightarrow \beta = \frac{23}{\alpha} \end{aligned} \quad (2) \quad (1)$$

$$\alpha^2 + \frac{1}{\alpha^2} = \alpha^2 + \left(\frac{2}{\alpha}\right)^2 \quad \text{اینجا فیل رفتن}, \quad \alpha^2 \cdot \frac{2^2}{\alpha^2} = \left(\alpha + \frac{2}{\alpha}\right)\left(\alpha^2 - 2 + \frac{4}{\alpha^2}\right)$$

$$\frac{2}{\alpha} = \beta \quad \xrightarrow{\quad} (2) \quad \xrightarrow{\quad} \frac{\alpha + \beta = 7}{\alpha^2 + \beta^2 - 2} \quad \xrightarrow{\quad} \frac{\alpha + \beta = 7}{\alpha^2 + \beta^2 - 2 = 7^2 - 2 = 47} \quad \xrightarrow{\quad} \dots$$

$$\Rightarrow \boxed{\alpha^2 + \frac{1}{\alpha^2} = (7)(47) = 329} \quad \checkmark$$

$$h(t) = -1.4t + 0.4t^2$$

(9)

ماکزیمم مقدار تابع $h(t)$ = ارتفاع ماکسیمم

(2)

$$h(t) = -1.4t + 0.4t^2 \quad \xrightarrow{\text{max}} \quad \begin{aligned} \frac{-b}{2a} &= \frac{-(-1.4)}{2(0.4)} = \frac{1.4}{0.8} = 1.75 \\ \frac{-\Delta}{4a} &\rightarrow \frac{-b^2 - 4ac}{-4} = \frac{-(-1.4)^2 - 4(0.4)(0)}{-4} = \frac{1.96}{-4} = -0.49 \end{aligned}$$

$$\max h(t) = \frac{1.96}{4} = 0.49 \quad \checkmark$$

نشان بفرستد تابع $h(t)$ =

$$h(t) = -1.4t + 0.4t^2 = 0$$

$$-1.4t + 0.4t^2 = 0 \quad -1.4(t - 0.4) = 0$$

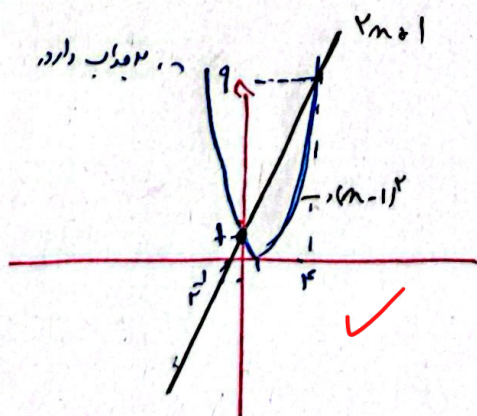
$$\begin{aligned} X & \quad \begin{aligned} t_1 &= 0 \\ t_2 &= 0.4 \end{aligned} \\ & \quad \checkmark \quad t_2 = 0.4 \end{aligned}$$

در ثانیه 0.4 باز می شود

$$(m-1)^2 = m+1$$

ی شبهه یاب m
 $m^2 - 2m + 1 = m + 1$
 $m^2 - 3m = 0$
 $m(m-3) = 0$

$$\begin{aligned} m &\leq 0 \\ m &\leq 3 \end{aligned} \quad \checkmark$$



(2) (1)

ب) $x^2 + y^2 = 1 \quad (x+2)$

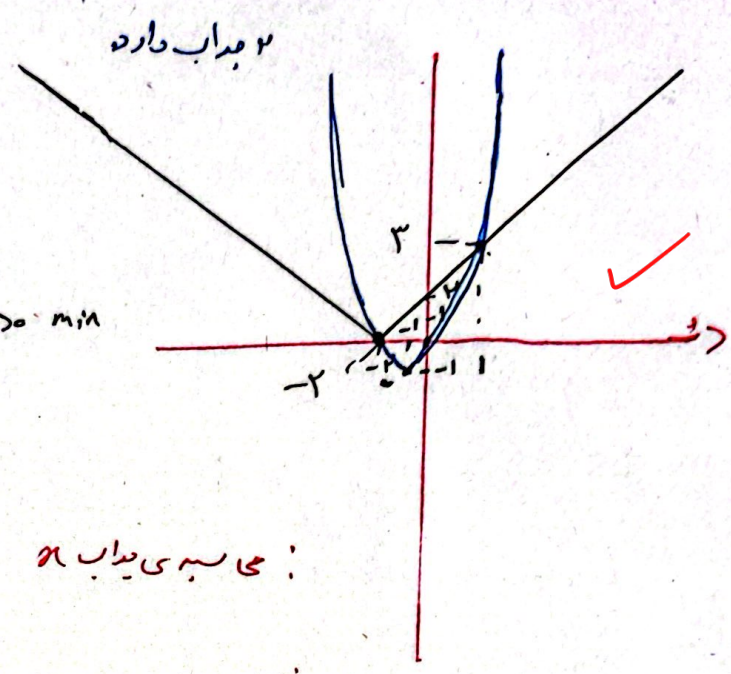
که مقدار x و y را به سبب $x^2 + y^2 = 1$ در نظر بگیریم
که قیمت منفی عدد ضربه را در نظر بگیریم

$f(x,y) = x^2 + y^2 \rightarrow \text{ext} / \frac{-f}{2} = -1 \quad a > 0 \text{ min}$
 $g_3 = -1$

$x^2 + y^2 = 0$
 $x(x-2) = 0$

$x=0 \rightarrow x=2$

یابی بیابان:



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

$x^2 - y^2 = -x-2 \rightarrow x^2 - y^2 = -x-2$

$x^2 - y^2 - x + 2 = 0 \rightarrow x = -2, x = 1 \quad \frac{x \geq -2}{x \leq -2} \checkmark$

$x^2 - y^2 + x + 2 = 0 \rightarrow x = -2, x = 1 \quad \frac{x \leq -2}{x \geq -2} \times$

$\{ x = -2, x = 1 \}$