

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

$$AB = \frac{c}{a} = 1 \quad (1)$$

$$\frac{x^2 + y^2}{ab^2} \quad (1)$$

$$\frac{x^2 + y^2}{ab^2} = \frac{x^2}{a} + \frac{y^2}{b^2} = \frac{1}{a} + \frac{1}{b^2}$$

$$\Rightarrow \frac{1}{b^2} = \left(\frac{1}{b}\right)^2 = \alpha^2$$

$\Rightarrow$

$$\alpha^2 = \left(\frac{1}{b}\right)^2 = \frac{1}{b^2}$$

$$\Rightarrow \alpha + \beta = \frac{-b}{a} = -1$$

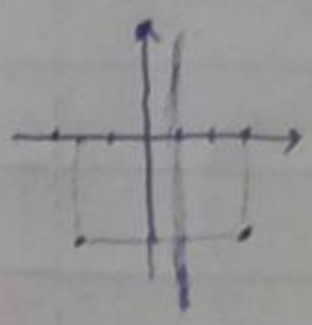
$$\Rightarrow \frac{1}{a} (\alpha^2 + \beta^2) = \frac{1}{a} ((\alpha + \beta)^2 - 2\alpha\beta) = \frac{1}{a} (1 - 2)$$

$$\Rightarrow \frac{1}{a} [(1)^2 + 2 \times 1 (1)] = \frac{1}{a} - 2 = 1 \Rightarrow \frac{1}{a} = 3 \Rightarrow a = \frac{1}{3}$$

$$x = \frac{-b}{2a} = \frac{1}{2} \Rightarrow \frac{b}{a} = -\frac{1}{2}$$

بر اساس معادلات نقاط داده می توان x را بر حسب y پیدا کرد:

$$(-\frac{1}{2}, -1) \text{ و } (1, -1)$$



$$\text{مجموع مختصات} = 2 \times x = 2 \times \frac{1}{2} = 1$$

$$x^2 + 1x + a = 0$$

$$\begin{cases} \alpha + \beta = \frac{-b}{a} = -1 \\ \alpha - \beta = \frac{c}{a} \end{cases} \Rightarrow \alpha = \frac{-1 - c/a}{2}, \beta = \frac{-1 + c/a}{2}$$

$$\alpha \beta = \frac{c}{a} = \frac{-1 - c/a}{2} \times \frac{-1 + c/a}{2} = \frac{1 - (c/a)^2}{4} \Rightarrow \frac{1 - (c/a)^2}{4} = \frac{c}{a} \Rightarrow 1 - (c/a)^2 = 4(c/a) \Rightarrow (c/a)^2 + 4(c/a) - 1 = 0$$

$$A(1, y), B(-1, y)$$

$$x = -1$$

$$x = 1$$

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

$$b^2 - 4ac = -4a$$

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

$$x^2 + 1x + a = 0 \Rightarrow x = \frac{-1 \pm \sqrt{1 - 4a}}{2}$$

$$\alpha^2 + \beta^2 = 1 \Rightarrow (\alpha + \beta)^2 - 2\alpha\beta = 1 \Rightarrow 1 - 2\alpha\beta = 1 \Rightarrow \alpha\beta = 0$$

$$-2\alpha\beta = 0 \Rightarrow \alpha\beta = 0$$

$$\left(\frac{-b}{2a}\right)^2 - 2\left(\frac{c}{a}\right) = 1 \Rightarrow \left(\frac{-2a}{2a}\right)^2 - 2\left(\frac{c}{a}\right) = 1 \Rightarrow 1 - 2\frac{c}{a} = 1 \Rightarrow \frac{c}{a} = 0$$

$$\Rightarrow (-1)^2 - 2\left(\frac{c}{a}\right) = 1 \Rightarrow 1 - 2\frac{c}{a} = 1 \Rightarrow \frac{c}{a} = 0 \Rightarrow c = 0$$

$$\Delta = b^2 - 4ac = -4a \Rightarrow 4a^2 - 4a\left(\frac{a}{4}\right) = -4a \Rightarrow 4a^2 - a^2 = -4a \Rightarrow 3a^2 = -4a \Rightarrow a = -\frac{4}{3}$$

$$\text{از رابطه (II)}$$

$$y = ax^2 + 1x - \frac{a}{4}$$

$$x = -1 \text{ و } x = 1$$

$$(III) \text{ رابطه}$$

$$a = -\frac{4}{3}$$

$$y = \frac{1}{3}$$

$$y = \frac{1}{3}$$

$$x' + ax + m = 0$$

$$\frac{-a \pm \sqrt{a^2 + 4m}}{-1} < \frac{9}{1} \quad -a \pm \sqrt{a^2 + 4m} < 9$$

$$\Rightarrow -a \pm \sqrt{a^2 + 4m} < 9$$

$$a^2 + 4m < 14 \Rightarrow m < \frac{14 - a^2}{4}$$

(I)

$$\Delta > 0$$

$$a^2 + 4m > 0$$

$$4m > -a^2$$

$$m > -\frac{a^2}{4}$$

(II)

از شرط (I) و (II) داریم

$$m = -3, -4, -5, -6$$

$$y = mx^2 - 12x + am - 1$$

$$y' = \frac{-a}{2a} = 1$$

(6) از گزین مقدار تابع، باید $m < 0$ باشد

$$\Delta = b^2 - 4ac = 144 - 4m(am - 1) = 144 - 4a^2m + 4m \Rightarrow$$

$$y = \frac{-\Delta}{2a} = \frac{-144 + 4a^2m - 4m}{2a} = 1$$

$$4a^2m - 4m - 144 = 0$$

$$m^2 - 11m + 36 = 0$$

$$(m - 4)(m - 9) = 0$$

$$m = 4 \Rightarrow m = 9$$

$$m = -9 \Rightarrow m = -4$$

$$x = \frac{12}{2m} \xrightarrow{m=9} x = \frac{12}{18} = \frac{2}{3}$$

$$x = 2$$

$$x^2 + r(a+1)x + ra - 1 = 0$$

$$a^2 = a \cdot b$$

$$a \cdot b = \frac{c}{a} = \frac{ra - 1}{1}$$

$$ra - 1 = a^2 \Rightarrow a^2 - ra + 1 = 0$$

$$(a - 1)^2 = 0 \Rightarrow a = 1$$

$$x^2 - vx - a = 0$$

$$rp^2 - sp + rs = ?$$

$$x^2 = t \Rightarrow t^2 - vt - a = 0$$

$$t = \frac{v \pm \sqrt{v^2 + 4a}}{2} \Rightarrow t < 0$$

$$t_1 = \frac{v + \sqrt{v^2 + 4a}}{2} = x^2 \Rightarrow$$

$$x = \pm \sqrt{\frac{v + \sqrt{v^2 + 4a}}{2}}$$

$$p = x_1 \cdot x_2 = -\left(\frac{v + \sqrt{v^2 + 4a}}{2}\right)$$

$$s = x_1 + x_2 = 0$$

$$rp^2 - sp + rs =$$

$$rp^2 = 2 \left(\frac{v + \sqrt{v^2 + 4a}}{2} \right)^2 = \frac{1}{2} (v + \sqrt{v^2 + 4a})^2 = -(\frac{v^2}{2} + v\sqrt{v^2 + 4a})$$

$$y = kx^2 - fx - g \quad \text{نقطه } x = \frac{b}{2a} = \frac{f}{2k} = \frac{r}{k}$$

$$y = -\frac{\Delta}{4a} = \frac{fac - b^2}{4a} \quad (9)$$

$$y = -fx - f \rightarrow y = -f(x+1) \rightarrow y = -f\left(\frac{r}{k} + 1\right) \quad (I)$$

$$\text{پس } y = \frac{fac - b^2}{4a} = \frac{-2fk - 19}{4k} = -\frac{2k + f}{k} = -1 - \frac{f}{k} = -\left(1 + \frac{f}{k}\right) \quad (II)$$

$$-f\left(\frac{r}{k} + 1\right) = -\left(1 + \frac{f}{k}\right) \quad \text{پس } (II), (I) \text{ و } r/r$$

$$\frac{r}{k} + f = 1 + \frac{f}{k}$$

$$\frac{r}{k} = -f \quad k = -\frac{r}{f}$$

$$\text{پس } y = -\left(1 + \frac{f}{k}\right) = -\left(1 + \frac{f \times r}{f}\right) = -1 - r$$

$$\boxed{y = -1 - r}$$

(10)

$$y = -mx^2 + mx + 1 \quad -mx^2 + mx + 1 = -m - x$$

$$y = -m - x \quad -mx^2 + (m+1)x + m+1 = 0$$

$$b^2 - 4ac < 0 \quad \Delta < 0 \quad \text{نقطه شریک ندارند یعنی}$$

$$(m+1)^2 + 4m(m+1) < 0 \quad 5m^2 + 4m + 1 < 0$$

$$(5m^2 + 1)(m+1) < 0 \Rightarrow$$

$$\frac{-1}{5} < x < -1$$

$$m \in (-1, -0.2)$$

