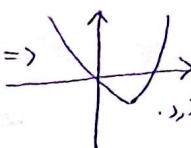


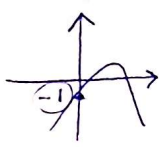


الف) $y = 3x^2 - 2x = x(3x - 2) = 0 \Rightarrow x = \begin{cases} \frac{2}{3} \\ 0 \end{cases} a > 0$  از ناحیه سوم نمیگذرد.

ب) $y = -x^2 + 4x = x(-x + 4) = 0 \Rightarrow x = \begin{cases} 4 \\ 0 \end{cases} a < 0$  از ناحیه دوم نمیگذرد.

الف) $2x^2 - 3x + 2 = 0 \Rightarrow x = \begin{cases} \frac{3}{4} \\ \frac{1}{2} \end{cases} a > 0, c = 2$  از نواحی 1 و 2 و 4 میگذرد.

ب) $-x^2 + 4x - 1 = 0 \Rightarrow P > 0, S > 0, a < 0, c = -1$  از نواحی 1 و 2 و 4 میگذرد.

الف) $\frac{\alpha + \beta}{\alpha - \beta} = \frac{S}{\text{اختلاف}} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$ $\left\{ \begin{array}{l} \text{اختلاف مثبت} \\ \sqrt{13} = \frac{1}{11} = \frac{1}{11}, P = -3, S = 1 \end{array} \right.$

ب) $\alpha^2 + \beta^2 = S^2 - 2P = 1 + 4 = 5$

ج) $\alpha^3 + \beta^3 = S^3 - 3SP = 1 + 9 = 10$

د) $\alpha^3 - \beta^3 = (\alpha - \beta)(\alpha^2 + \alpha\beta + \beta^2) = (\text{اختلاف})(S^2 - 2P + P) = \sqrt{13}(1 + 3) = 4\sqrt{13}$

$(x-2)(x^2 - ax + a) = 0, x = 2 \rightarrow x^2 - ax + a = 0 \xrightarrow{x=2} x^2 - 4x + 4 = 0 \Rightarrow \alpha = 2$
 $\rightarrow x^2 - ax + a = 0 \xrightarrow{\Delta < 0} a^2 - 4a < 0 \Rightarrow \frac{4}{+1} = \frac{4}{+1} \Rightarrow a = (0, 4)$
 $a = (0, 4) \cup \{2\}$

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$3x^2 - 12x - a = 0 \Rightarrow S = 4, P = \frac{-a}{3} \Rightarrow \alpha^2 + S^2 - 2P - 4\alpha = \alpha^2 + 16 - 2P - 4(\alpha + \beta) = 7$
 $-2P = -9 \Rightarrow -2(\frac{-a}{3}) = -9 \Rightarrow a = -9$
 $\alpha^2 - 2P - P = -9$

$\Rightarrow 3x^2 - 12x + 9 = 0 \Rightarrow x = \begin{cases} 1 \leftarrow x_1 \\ 3 \leftarrow x_2 \end{cases}$ $\frac{x_1}{a} = \frac{3}{-9} = \left(-\frac{1}{3}\right) \frac{a}{x_2} = -3$

دریم جمع مزدون نقطه با عرض برابر در سمت راست \Leftrightarrow $(\sqrt{r}\alpha)^2 + (\sqrt{r}\alpha + r)^2 = 1 \Rightarrow S = \omega \Rightarrow \omega = \frac{1}{\sqrt{r}}$

ext $\left| \begin{matrix} \omega \\ +r \end{matrix} \right. \left. \begin{matrix} ax^2 + bx + c = 0 \\ \frac{-b}{2a} = \omega \Rightarrow b = -1 \cdot a \Rightarrow \alpha x^2 - 1 \cdot \alpha x + c = 0 \end{matrix} \right\}$

$\Rightarrow \sqrt{r}\alpha > 0 \Rightarrow \alpha < r, \omega \left. \begin{matrix} a \in \mathbb{N} \\ a - r \geq 0 \Rightarrow a \geq r \end{matrix} \right\} \Rightarrow a = r \Rightarrow \left| \begin{matrix} 1 \\ 1 \end{matrix} \right|$

$x = 0, y = r \Rightarrow r\omega a - a \cdot a + c = r \left. \begin{matrix} a = -\frac{1}{\sqrt{r}} \\ c = -\frac{1}{\sqrt{r}} \end{matrix} \right\} \leftarrow$ پاسخ

$x = 1, y = 1 \Rightarrow a - 1 \cdot a + c = 1$

$S = \alpha + \beta = \frac{-(-a)}{a} = 1 \left. \begin{matrix} r\beta^2 + \alpha^2 - \beta = \frac{14}{r_0} \Rightarrow \beta^2 - \beta + (\alpha + \beta)^2 - 2\alpha\beta = \frac{14}{r_0} \\ = \beta(\beta - 1) + 1 - 2\alpha\beta = \beta(\beta - (\alpha + \beta)) + 1 - 2\alpha\beta = -r\alpha\beta + 1 = \frac{14}{r_0} \Rightarrow \alpha\beta = \frac{1}{r_0} \end{matrix} \right\}$

$P = \frac{-b}{a} = \frac{1}{r_0} \Rightarrow a = -r_0 b \Rightarrow -r_0 \beta x + r_0 \beta x - \beta = 0 \Rightarrow -r_0 x + r_0 x - 1 = 0$

تفاضل $\left| \begin{matrix} \sqrt{\Delta} \\ 1 \end{matrix} \right. = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{r_0}}{r_0} = \frac{1\sqrt{r_0}}{r_0} = \frac{\sqrt{r_0}}{\omega} \leftarrow$ پاسخ

$ax^2 + bx + c = 0 \quad c = \frac{r}{r} \Rightarrow ax^2 + bx + \frac{r}{r}$

$\frac{-b}{2a} = \frac{-\omega + 1}{r} \Rightarrow b = ra \quad \text{و نیز } -\frac{\Delta}{4a} = \frac{b - ra + c}{4a} = \frac{1}{r}$

$\frac{(ra)^2 - (ra)c}{4a} = \frac{ra - c}{4} = \frac{1}{r} \Rightarrow \begin{cases} a = \frac{1}{r} \\ b = r \end{cases} \quad \frac{x}{r} + rx \rightarrow \frac{r}{r} = \beta$

$\Rightarrow x^2 + rx + r - \beta = 0 \rightarrow x = \begin{cases} -\omega \\ 1 \end{cases} \rightarrow 1 + r + r\beta = \Rightarrow \boxed{\beta = r}$

$x^2 + 9x + a = 0 \Rightarrow x = \begin{cases} \frac{-9 - \sqrt{81 - 4a}}{2} = -\frac{9}{2} - \sqrt{9 - a} = \alpha \\ \frac{-9 + \sqrt{81 - 4a}}{2} = -\frac{9}{2} + \sqrt{9 - a} = \beta \end{cases} \leftarrow \alpha < \beta \text{ چون}$

$r\beta^2 + r\alpha^2 = (r(9 - 2a - 12\sqrt{9 - a})) + \omega^2 r - 2a + 12\sqrt{9 - a} = 9 \Rightarrow -a + 4\sqrt{9 - a} = 12\sqrt{r} + \omega a$

$a - \omega a + 4\sqrt{9 - a} = 12\sqrt{r} \Rightarrow \boxed{a = 1} \leftarrow$ پاسخ

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = \omega \xrightarrow{\text{مضرب}} \frac{\alpha + \beta + 2\sqrt{\alpha\beta}}{\alpha\beta} = r\omega \Rightarrow \frac{m+1r}{r^2} + \frac{2\sqrt{1}}{r^2} = r\omega$

$\Rightarrow \frac{m+1r}{r^2} + \frac{2}{r^2} = \frac{r\omega}{r^2} \quad \boxed{m = -1} \Rightarrow -x^2 + rx + r = 0$

$P = \frac{c}{a} = \frac{-r}{-1} \leftarrow$ پاسخ