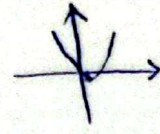

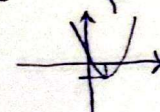


الف) $y = 3x^2 - 2x$ $\frac{-b}{2a} = \frac{2}{6} = \frac{1}{3}$ $3\left(\frac{1}{3}\right)^2 - 2\left(\frac{1}{3}\right) = \frac{1}{3} - \frac{2}{3} = -\frac{1}{3}$ 


از ناحیه‌ی مثبتی گذرد.

ب) $y = -x^2 + 2x$ $\frac{-b}{2a} = \frac{-2}{-2} = 1$ $-(1)^2 + 2(1) = 1$ 

از ناحیه‌ی مثبتی گذرد.

الف) $y = 2x^2 - 5x + 2$ $\frac{-b}{2a} = \frac{5}{4}$ $2\left(\frac{5}{4}\right)^2 - 5\left(\frac{5}{4}\right) + 2 = \frac{25}{8} - \frac{25}{4} + 2 = -\frac{9}{8}$ 

از ناحیه‌ی اول، دوم و چهارم می‌گذرد.

ب) $y = -x^2 + 4x - 1$ $\frac{-b}{2a} = \frac{-4}{-2} = 2$ $-(2)^2 + 4(2) - 1 = 3$ 

از ناحیه‌ی اول، دوم و چهارم می‌گذرد.

$x^2 - x - 3 = 0 \rightarrow S = \frac{-b}{a} = \frac{1}{1} = 1$, $P = \frac{c}{a} = \frac{-3}{1} = -3$, $\alpha - \beta = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{1 - 4(1)(-3)}}{1} = \sqrt{13}$

الف) $\frac{\alpha + \beta}{\alpha - \beta} = \frac{1}{\sqrt{13}}$

ب) $\alpha^2 + \beta^2 = S^2 - 2P \Rightarrow 1 - 2(-3) = 7$

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

د) $\alpha^3 - \beta^3 = (\alpha - \beta)^3 + 3\alpha\beta(\alpha - \beta) \Rightarrow (\sqrt{13})^3 + 3(-3)(\sqrt{13}) = \sqrt{13}$

$y = (x - 2)(x^2 - \alpha x + a)$

ریشه‌ها $x = 2$

$\Delta = a^2 - 4a \Rightarrow a(a - 4) \Rightarrow \Delta < 0 \Rightarrow a(a - 4) < 0$

$\Rightarrow 0 < a < 4$

$a = 4 \Rightarrow x^2 - 4x + 4 = (x - 2)^2 \Rightarrow (x - 2)^3 \rightarrow$ از هم و متعلق تابع $\Rightarrow 0 < a < 4$

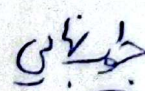
~~$3x^2 - 12x - \alpha = 0$~~ $\alpha + \beta = 4$ $\alpha\beta = \frac{-a}{3}$

$2\alpha^2 + \beta^2 - 4\alpha = 7 \Rightarrow \beta = 4 - \alpha \Rightarrow 2\alpha^2 + (4 - \alpha)^2 - 4\alpha = 7$

$\Rightarrow 3\alpha^2 - 12\alpha + 9 = 0 \Rightarrow \alpha^2 - 4\alpha + 3 = 0 \Rightarrow (\alpha - 1)(\alpha - 3) = 0$

$\beta = 3 \Rightarrow \alpha = 1$ \checkmark ریشه‌ها $= 3$

$\beta = 1 \Rightarrow \alpha = 3$

$\alpha\beta = 3 \Rightarrow \alpha\beta = \frac{-a}{3} \Rightarrow \frac{-a}{3} = 3 \Rightarrow a = -9$ $\frac{a}{3} = \frac{-9}{3} = -3$ 

$$N = \{x, x, y, \dots\}$$

$$\alpha = \tau \Rightarrow A(9, 1), B(1, 1)$$

$$x_s = \frac{9+1}{2} = 5 \Rightarrow x_s = 5$$

$$S(b, b-\tau) \Rightarrow b = 5 \rightarrow y_s = \tau \Rightarrow S(5, \tau)$$

$$y = a(x - x_s)^r + y_s \Rightarrow a(x - 5)^r + \tau$$

جوابي

$$B(1, 1) \Rightarrow 1 = a(1 - 5)^r + \tau \Rightarrow a = -\frac{1}{\tau}$$

$$y = -\frac{1}{\tau}(x - 5)^r + \tau \Rightarrow y = -\frac{1}{\tau}(x^r - 10x + 5^r) + \tau \Rightarrow -\frac{1}{\tau} \times (5^r) + \tau = -\frac{1}{\tau} \Rightarrow \left(\frac{1}{\tau}\right)$$

$$\alpha x^r - \alpha x - b = 0 \quad \begin{cases} p = -\frac{b}{a} \\ s = \frac{a}{a} = 1 \end{cases} \quad \begin{matrix} \tau_0 \beta^r + \tau_0 \alpha^r - \tau_0 \beta = 1V \\ (\tau_0 + 1\alpha) \quad (\tau_0 - 1\alpha) \end{matrix}$$

$$(\tau_0 \beta^r + \tau_0 \alpha^r) + 1 \cdot (\beta^r - \alpha^r) - \tau_0 \beta = 1V \Rightarrow \tau_0 (1 + \frac{\tau b}{a}) + 1 \cdot (1)(\beta - \alpha) - \tau_0 \beta = 1V$$

$$\tau_0 (\beta^r + \alpha^r) = \tau_0 (s^r - \tau p) = \tau_0 (1 + \frac{\tau b}{a})$$

$$\Rightarrow \tau_0 (1 + \frac{\tau b}{a}) + 1 \cdot \beta - 1 \cdot \alpha - \tau_0 \beta = 1V \Rightarrow \tau_0 (1 + \frac{\tau b}{a}) = 1V \Rightarrow 1 + \frac{\tau b}{a} = \frac{1}{\tau_0}$$

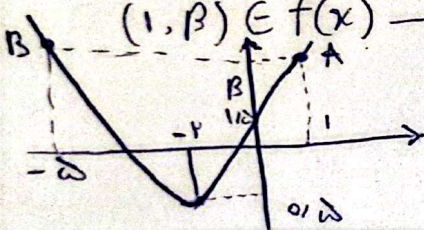
$$\Rightarrow \frac{\tau b}{a} = -\frac{1}{\tau_0} \rightarrow \frac{b}{a} = -\frac{1}{\tau_0} \rightarrow |\alpha - \beta| = \frac{\sqrt{\Delta}}{|\alpha|} = \frac{\sqrt{\alpha^r + \tau_0 b}}{|\alpha|} = \sqrt{1 - \frac{1}{\tau_0}} = \frac{\tau}{\sqrt{\tau_0}}$$

$$x = \frac{-\omega + 1}{\tau} = -\tau \rightarrow f(x) = a(x + \tau)^r = \frac{1}{\tau}$$

$$(0, \frac{\tau}{\tau}) \in f(x) \rightarrow \frac{\tau}{\tau} = a(0 + \tau)^r = \frac{1}{\tau} \rightarrow a = \frac{1}{\tau^r}$$

$$(1, \beta) \in f(x) \rightarrow \beta = \frac{1}{\tau} (1 + \tau)^r = \frac{1}{\tau} \rightarrow \beta = \frac{1}{\tau}$$

جوابي



$$x^2 + 4x + a = 0 \quad s = -4, p = a$$

$$\alpha^r + \beta^r = s^r - \tau p$$

$$\alpha = -4 - \sqrt{16 - 4a}$$

$$\alpha = -4 - \sqrt{4 - a}$$

$$\beta = -4 + \sqrt{4 - a}$$

$$\tau \alpha^r + \tau \beta^r \Rightarrow \alpha^r + \tau \alpha^r + \tau \beta^r = \tau (\alpha^r + \beta^r)$$

$$9 + (9 - a) + \sqrt{9 - a} + \tau (16 - \tau a) = 12\sqrt{\tau} + 11a$$

$$18 - a + 4\sqrt{9 - a} = 12\sqrt{\tau} + 11a$$

$$18 - 2a + 4\sqrt{9 - a} = 12\sqrt{\tau}$$

$$\frac{18 - 2a}{4} + \sqrt{9 - a} = 3\sqrt{\tau} \Rightarrow 9 - a = 1 \rightarrow a = 8$$

$$A = \sqrt{\frac{1}{x_1}} + \sqrt{\frac{1}{x_2}} = 2$$

$$A^r = \frac{1}{x_1} + \frac{1}{x_2} + \tau \sqrt{\frac{1}{x_1 x_2}} = \frac{x_1 + x_2}{x_1 x_2} + \tau \sqrt{\frac{1}{x_1 x_2}} = \frac{s}{p} + \tau \sqrt{\frac{1}{p}} =$$

$$-\frac{b}{c} + \tau \sqrt{\frac{a}{c}} = \frac{(m + 1\tau)}{1} + \tau \sqrt{\frac{\tau c}{1}} = (m + 1\tau) + \tau(9) = \tau \omega \Rightarrow$$

$$m + 1\tau = \tau \omega \Rightarrow m = 1\tau \quad \tau_{\text{نوع}} = \frac{\tau}{-1} = (-\tau) \text{ جوابي}$$