

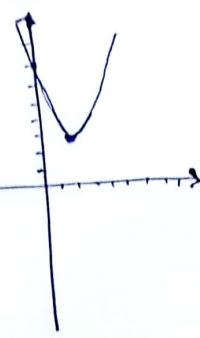
الف) $x^2 - 4x + 7$

$-\frac{b}{2a} = \frac{4}{2} = 2$

$-\frac{\Delta}{4a} = \frac{-16 + 28}{4} = \frac{12}{4} = 3$

$b^2 - 4ac = 16 - 28 = -12 < 0$

$c < 0$



ب) $-x^2 + 5x - 1$

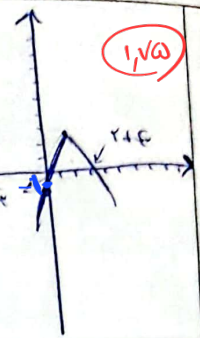
$-\frac{b}{2a} = \frac{-5}{-2} = 2.5$

$-\frac{\Delta}{4a} = \frac{-25 + 4}{-4} = \frac{-21}{-4} = 5.25$

$b^2 - 4ac = 25 - 4 = 21 > 0$

$x_1 = \frac{5 - \sqrt{21}}{-2}$

$x_2 = \frac{5 + \sqrt{21}}{-2}$



مقدار m

الف) $2x^2 + (m+1)x + \frac{1}{2}m + 2 = 0$

$\Delta > 0 \rightarrow m^2 - 2m - 1 < 0 \rightarrow m < -1 \text{ و } m > 3$

$\Delta = 0 \rightarrow m^2 - 2m - 1 = 0 \rightarrow m = -1 \text{ و } m = 3$

$\Delta < 0 \rightarrow (m+1)^2 - 4(m+1) < 0 \rightarrow m^2 + 2m + 1 - 4m - 4 < 0 \rightarrow m^2 - 2m - 3 < 0$

$m = \frac{2 \pm \sqrt{4 + 12}}{2} \rightarrow m = -1 \text{ و } m = 3$

$\Delta > 0 \rightarrow m^2 - 2m - 1 < 0 \rightarrow m < -1 \text{ و } m > 3$

ب) $-1 < m < 3$

ج) $m < -1 \text{ و } m > 3$

د) $m < -1 \text{ و } m > 3$

ه) $m < -1 \text{ و } m > 3$

الف) $\Delta > 0 \rightarrow 6m^2 + 11m - 5 - 60m + 10 < 0 \rightarrow 6m^2 - 49m + 5 < 0$

$-\frac{b}{a} < 0 \rightarrow \frac{49}{6} < 0 \rightarrow (m+1)(m-4) < 0 \rightarrow -1 < m < 4$

ب) $\frac{c}{a} < 0 \rightarrow \frac{10}{m-4} < 0 \rightarrow m < 4$

ج) $\frac{c}{a} < 0 \rightarrow \frac{10}{m-4} < 0 \rightarrow m < 4$

د) $m < -1$

ه) $-1 < m < 4$

الف) $\frac{c}{a} < 0 \Rightarrow \frac{10}{m-4} < 0 \Rightarrow m < 4$

ب) $-\frac{b}{2a} = 2 \rightarrow \frac{4(m+1)}{4(m-4)} = 2 \rightarrow m+1 = 2m-8 \rightarrow m = 9$

م = 1

$\frac{1}{3}x^2 - (\sin^2 \alpha)x + \frac{1}{3} = 0$

$\Delta > 0 \rightarrow \sin^2 \alpha - 1 < 0 \rightarrow \sin^2 \alpha < 1$

۱) $\sin \alpha = 1 \rightarrow \frac{1}{3}x^2 - 2x + \frac{1}{3} = 0 \Rightarrow x = \frac{2 \pm \sqrt{4 - \frac{4}{3}}}{\frac{2}{3}} = \frac{3 \pm \sqrt{3}}{1} > 0$

۲) $\sin \alpha = -1 \rightarrow \frac{1}{3}x^2 + 2x + \frac{1}{3} = 0 \Rightarrow x = \frac{-2 \pm \sqrt{4 - \frac{4}{3}}}{\frac{2}{3}} = \frac{-3 \pm \sqrt{3}}{1} < 0$

$$y = \frac{(x^2 - x - 1)(x^2 - 10x - 1)}{1 - x^2}$$

$$\frac{x^2 - x - 1}{1 - x^2} \div (x - 1) = \frac{x^2 + 1}{x + 1} \Rightarrow \frac{x^2 - 10x - 1}{(x - 1)(x + 1)} = \frac{x^2 - 10x - 1}{(x - 1)(x + 1)}$$

$$\frac{(x - 1)(x^2 + 1)(x + 1)(x^2 - 10x - 1)}{(1 - x)(1 + x)} \rightarrow \frac{(-x^2 - 1)(x^2 - 10x - 1)}{-4x^2 + 11x + 1}$$

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

$$a = m \quad b = -(m + 1) \quad c = -1$$

$$S = \frac{-b}{a} = \frac{m + 1}{m}$$

$$S = \frac{1}{P} = 2$$

$$PS = 2P + 1 \Rightarrow P\left(\frac{m + 1}{m}\right) = \frac{-1}{m} + 1 \quad S^2 - 2P = x^2 - 2(-1) = 4$$

$$Pm + 1 = 2m - 1 \Rightarrow m = 2$$

$$m = 2$$

$$x^2 - \omega x + 1 = 0 \quad \alpha \cdot \beta = 1 \quad \alpha + \beta = \omega \quad \frac{\alpha + \beta}{\alpha \beta} = \omega \Rightarrow \frac{\alpha + \beta}{1} = \omega \Rightarrow \alpha + \beta = \omega$$

$$\beta^2 - \beta\omega + 1 = 0 \quad \alpha = \frac{1}{\beta} \quad \alpha + \beta = \omega \Rightarrow \frac{1}{\beta} + \beta = \omega \Rightarrow \beta^2 - \omega\beta + 1 = 0$$

$$\beta^2 = \omega\beta - 1 \quad \beta = \frac{\omega \pm \sqrt{\omega^2 - 4}}{2} \quad \omega(\omega\beta - 1) = \omega\beta - 1 \Rightarrow \omega^2\beta - \omega = \omega\beta - 1 \Rightarrow \omega^2\beta - \omega\beta = \omega - 1 \Rightarrow \beta(\omega^2 - \omega) = \omega - 1$$

$$\beta^3 = \beta \cdot \beta^2 \Rightarrow \beta(\omega\beta - 1) = \omega\beta^2 - \beta \Rightarrow \omega(\omega\beta - 1) = \omega\beta^2 - \beta \Rightarrow \omega^2\beta - \omega = \omega\beta^2 - \beta \Rightarrow \omega^2\beta - \omega\beta^2 = \omega - \beta \Rightarrow \omega\beta(\omega - \beta) = \omega - \beta \Rightarrow \omega\beta = 1$$

$$\beta^4 = \beta \cdot \beta^3 \Rightarrow \beta(1 - \omega\beta) = 1 - \omega\beta^2 \Rightarrow 1 - \omega\beta = 1 - \omega\beta^2 \Rightarrow \omega\beta = \omega\beta^2 \Rightarrow \beta = \beta^2 \Rightarrow \beta = 1$$

$$y_1 = ax^2 + bx + c \quad y_2 = x^2 + 10x + 1$$

$$y_1 = x^2 - 11x + 10$$

$$y_2 = x^2 + 10x + 1$$

$$\begin{cases} y_1 = a + b + c \\ c = 9a - 11b + c \end{cases} \Rightarrow \begin{cases} a + b = 1 \\ 9a - 11b = 0 \end{cases}$$

$$\begin{cases} a + b = 1 \\ 9a - 11b = 0 \end{cases} \Rightarrow \begin{cases} a = 1 \\ b = 0 \end{cases}$$

$$\frac{-b}{2a} = \frac{-0}{2 \cdot 1} = 0$$

$$\frac{1}{1 - \epsilon}$$

$$\frac{1}{1 - \epsilon}$$

$$y = x^2 + (m + 1)x + m + 1 \Rightarrow x^2 + mx + x + m + 1 = x^2$$

$$x^2 + mx + m + 1 = 0 \Rightarrow \Delta = m^2 - 4(m + 1) = 0 \quad m = \frac{1 \pm \sqrt{4\epsilon + 19}}{2}$$

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

$$m = 1$$

$$m = 1$$

$$\frac{1}{1 - \epsilon}$$

$$\frac{1}{1 - \epsilon}$$

$$\frac{1}{1 - \epsilon}$$

$$\frac{1}{1 - \epsilon}$$