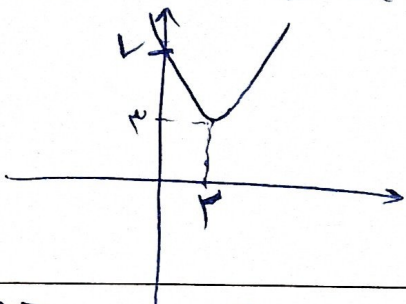
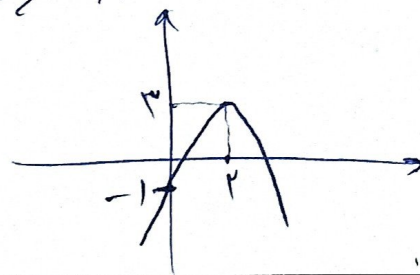


الف) $x^2 - 4x + 7 \rightarrow -\frac{b}{2a} = \frac{4}{2} = 2$
 $a < 0 \rightarrow \min$
 $(2)^2 - 4(2) + 7 = 3$



ب) $y = -x^2 + 4x - 1 \rightarrow -\frac{b}{2a} = \frac{-4}{-2} = 2$
 $a > 0 \rightarrow \max$
 $-(2)^2 + 4(2) - 1 = 3$



الف) $\Delta > 0 \rightarrow (m+1)^2 - 4(2)(\frac{1}{2}m+2) > 0 \rightarrow m^2 + 2m + 1 - 4m - 16 > 0$
 $\rightarrow m^2 - 2m - 15 > 0 \rightarrow (m-8)(m+3) > 0 \rightarrow + \frac{-3}{-1} - \frac{8}{-1} + \Rightarrow m: (-\infty, -3) \cup (8, +\infty)$
 ب) $\Delta = 0 \rightarrow (m+1)^2 - 4(2)(\frac{1}{2}m+2) = 0 \rightarrow m^2 - 2m - 15 = 0 \rightarrow m = -3, m = 8$
 ج) $\Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow (m-8)(m+3) < 0 \rightarrow + \frac{-3}{-1} - \frac{8}{-1} + \Rightarrow m: (-3, 8)$
 د) $\Delta > 0 \rightarrow (m+1)^2 - 4(2)(\frac{1}{2}m+2) > 0 \rightarrow m^2 - 2m - 15 = 0 \rightarrow + \frac{-3}{-1} - \frac{8}{-1} + \Rightarrow m: (-\infty, -3] \cup [8, +\infty)$

الف) $\begin{cases} \Delta > 0 \rightarrow m^2 - 2m + 16 > 0 \rightarrow a > 0 \Rightarrow \text{همواره مثبت} \\ \Delta < 0 \rightarrow \frac{2(m+1)}{m-2} < 0 \rightarrow \Delta' < 0 \\ p > 0 \rightarrow \frac{1}{m-2} < 0 \end{cases} \Rightarrow \text{همواره مثبت}$
 $\Rightarrow \text{①: } \emptyset$

ب) $\begin{cases} p < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m > 2 \\ \Delta < 0 \rightarrow \frac{2(m+1)}{m-2} < 0 \rightarrow -1 < m < 2 \end{cases} \Rightarrow \text{①} \Rightarrow m: (-1, 2)$

الف) $\begin{cases} a < 0 \rightarrow m-2 < 0 \rightarrow m < 2 \\ p < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m < 2 \\ \Delta > 0 \rightarrow m^2 - 2m + 16 > 0 \end{cases} \Rightarrow \text{همواره مثبت} \Rightarrow \text{همواره مثبت} \Rightarrow \text{همواره مثبت}$
 $\Rightarrow \text{اشتراک: } m < 2 \rightarrow (-\infty, 2)$

ب) $-\frac{b}{2a} = -2 \Rightarrow \frac{2(m+1)}{2(m-2)} = -2 \Rightarrow -2m + 2 = m + 1 \Rightarrow 3m = 3 \Rightarrow m = 1$

الف) $\begin{cases} \Delta = 0 \rightarrow 4 \sin^2 \alpha - 4(\frac{1}{3})(\frac{4}{3}) = 4 \sin^2 \alpha - \frac{16}{9} = 0 \Rightarrow \sin \alpha = \pm 1 \\ \Delta > 0 \rightarrow \frac{4 \sin^2 \alpha}{\frac{1}{3}} = 4 \sin^2 \alpha > 0 \end{cases} \Rightarrow \text{عقود ۱-}$
 $\Rightarrow \frac{1}{3}x^2 - 2x + \frac{4}{3} = 0 \rightarrow x^2 - 2x + 1 = 0 \rightarrow (x-1)^2 = 0 \Rightarrow x = 1$

$$\frac{(x_n^2 - x_{n-1})(x_n^2 - x_{n-2})}{(1-x)(1+x)} = \frac{(-1)^{n-1}(x_{n+1})(x_{n-1})(x_n - 2)}{(x+1)(1-x)} = - (x_{n+1})(x_n - 2)$$

$$\rightarrow y = -4x^2 + 12x + 6 \rightarrow y_{\max}: \frac{-\Delta}{2a} = -\frac{(b^2 - 4ac)}{2a} = -\frac{(12^2 - 4(-4)(6))}{-8} = \frac{129}{8} \approx 16,05$$

$$mx^2 - (m+1)x - 1 = 0 \rightarrow \begin{cases} S: \frac{m+1}{m} \\ p: \frac{-1}{m} \end{cases}$$

$$xS = 0p + v \rightarrow x\left(\frac{m+1}{m}\right) = 0\left(\frac{-1}{m}\right) + v \rightarrow \frac{x(m+1)}{m} = \frac{-1}{m} + v \xrightarrow{m \neq 0} x(m+1) = -1 + vm$$

$$\Rightarrow m = 14 \Leftrightarrow m = 5$$

$$\alpha^2 + \beta^2 = S^2 - 2p \Rightarrow \left(\frac{m+1}{m}\right)^2 - 2\left(\frac{-1}{m}\right) = \left(\frac{x}{m}\right)^2 + 1 = \frac{9}{5} + \frac{2}{5} \in \left\{\frac{13}{5}\right\}$$

$$\begin{cases} S: \frac{b}{a} = 8 \\ p: \frac{c}{a} = 1 \end{cases}$$

$$\frac{\alpha + \beta^2}{\partial \beta^2} \xrightarrow{\times \alpha^2} \frac{\alpha^3 + \beta^2 \alpha^2}{\partial \beta^2 \alpha^2} = \frac{\alpha^3 + \alpha^2 \beta^2}{\partial \beta^2 \alpha^2} \rightarrow p^2$$

$$\Rightarrow \frac{\alpha^3 + (\beta^2)^2}{\partial (\beta^2)^2} = \frac{\alpha(\alpha^2 + \beta^4)}{\beta^4} = \frac{\alpha(S^2 - 2p)}{\beta^4} = \frac{(8)^2 - 2(1)(1)}{8} = \frac{63}{8} = 7,875$$

$$\text{Nble: } ax^2 + bx + 2$$

$$y = 2x + 10$$

$$\begin{cases} \alpha: 2 \rightarrow 4a + 2b + 2 = 12 \rightarrow 4a + 2b = 10 \\ \beta: -1 \rightarrow 9a - 1b + 2 = 5 \rightarrow 9a - 1b = 3 \end{cases} \rightarrow \underline{4a = b}$$

$$\rightarrow 10a = 10 \rightarrow a = 1 \Rightarrow b = 4$$

$$\xrightarrow{\text{Nble}} y: x^2 + 2x + 2 \Rightarrow \text{Nble: } \frac{-b}{2a} = \frac{-2}{2} = -1,0$$

$$\begin{cases} y = 2x^2 + (m+1)x + m+4 \\ y = x \end{cases} \rightarrow 2x^2 + (m+1)x + m+4 = x \Rightarrow 2x^2 + (m)x + m+4 = 0$$

$$\text{Nble} \rightarrow \Delta = 0 \quad b^2 - 4ac = 0 \Rightarrow m^2 - 4(1)(m+4) = 0 \Rightarrow m^2 - 4m - 16 = 0$$

$$\Rightarrow (m-12)(m+4) = 0 \Rightarrow \begin{cases} m = 12 \\ m = -4 \end{cases}$$