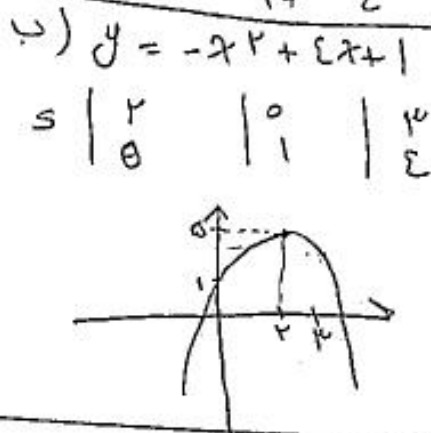
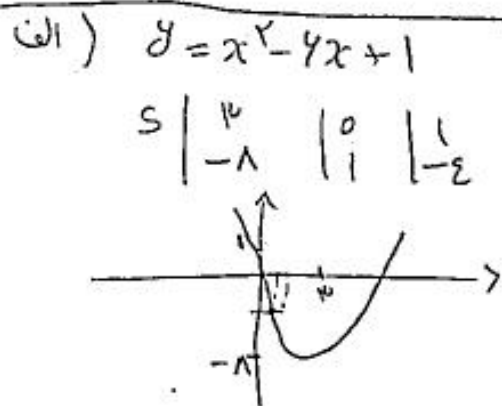


الف) $y = 12x^2 - 4x + 1 \xrightarrow{a > 0} \min \left| \frac{-b}{2a} \right| \Rightarrow \min \left(\frac{4}{-1} = 1 \right)$

ب) $y = -2x^2 + 4x - 1 \xrightarrow{a < 0} \max \left| \frac{-b}{2a} = \frac{4}{-4} = -1 \right|$
 $-2 \times \frac{4}{14} + \frac{4}{2} - 1 = -\frac{14}{14}$



$4x^2 + kx^2 - 9x - 2 = 0$

$\alpha\beta = -2$
 $\alpha + \beta = 1 \Rightarrow \alpha = 1 - \beta$

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

$\alpha + \beta = 1 \Rightarrow \alpha + \beta = 1$
 $-1 + 2 = 1$

$4\alpha + k - 9 - 2 = 0 \Rightarrow 4 + k - 11 - 2 = 0 \Rightarrow k = 9$
 $-2 + k + 9 - 2 = 0 \Rightarrow k = -5$

$x^2 - 2mx + m = 0$

$|\sqrt{\alpha} - \sqrt{\beta}| = 1 \Rightarrow (\sqrt{\alpha} - \sqrt{\beta})^2 = 1 \Rightarrow \alpha + \beta - 2\sqrt{\alpha\beta} = 1$

$2m - 2\sqrt{m} - 1 = 0 \Rightarrow (\sqrt{m} + 1)(\sqrt{m} - 1) = 0$
 $m = 1$
 $m = -1$

$\Rightarrow m = 1$ $x^2 - 2x - 1 = 0$ $\alpha\beta = \frac{c}{a} = -1$

$S = \frac{m \left(\frac{\sqrt{A}}{|a|} \right)}{r} = \frac{m \left(\frac{\sqrt{(m+1)^2 - 4m}}{1} \right)}{1} = \frac{m \sqrt{(m+1)^2 - 4m}}{1} = \frac{m}{2}$

$m \left(\sqrt{(m+1)^2 - 4m} \right) = 2 \Rightarrow m(m+1) = 2 \Rightarrow m^2 + m - 2 = 0$
 $m = 1 \rightarrow y = x^2 - 2x + 1 = (x-1)^2$
 $\frac{dy}{dx} = \frac{-b}{2a} = \frac{2}{2} = 1$

$$y = ax^2 + px + q \rightarrow y_{\min} = \frac{-1}{2a} = \frac{1}{1} \Rightarrow \frac{-(9 - \varepsilon a^2)}{2a} = \frac{1}{1} \Rightarrow -2(9 - \varepsilon a^2) = 2a \quad (4)$$

$$2a^2 - 2a - 18 = 0$$

$$\Delta = \varepsilon^2 + 4 \times 18 \times 1 = 92$$

$$a = 2$$

$$a_1, 2a_2 = \frac{\sqrt{\varepsilon} \pm \sqrt{92}}{2} =$$

$$a_1 = \frac{\sqrt{\varepsilon} + 2}{2} \leftarrow$$

$$a_2 = \frac{\sqrt{\varepsilon} - 2}{2} \leftarrow$$

$$x^2 - (a+1)x + a = 0 \xrightarrow{\text{نرطبي}} \frac{\sqrt{\Delta}}{2a} = r \quad \sqrt{(a+1)^2 - \varepsilon a} = r \Rightarrow (a-1)r = r \quad (1)$$

$$(a-1-r)(a-1+r) = 0 \rightarrow (a-r)(a+1) = 0 \rightarrow a = -1 \times$$

$$a = 2 \checkmark$$

$$x^2 - (ra+1)x + b = 0 \rightarrow \frac{\sqrt{\Delta}}{2a} = r \quad \sqrt{100 - \varepsilon b} = r$$

$$b = 2\varepsilon$$

$$\text{الف} = |r_2 - r_1| = |2\varepsilon - \varepsilon| = \varepsilon \quad r_2 = b = 2\varepsilon$$

$$y = -ax^2 + ax + r \quad \left| \begin{array}{l} \frac{a}{-ra} - \frac{1}{r} \\ \frac{a+1}{\varepsilon} \end{array} \right.$$

$$y = rbx^2 - bx - 1 \quad \left| \begin{array}{l} \frac{1}{c} = -b \\ -\frac{b}{a} - 1 \end{array} \right. \Rightarrow rbx \frac{1}{\varepsilon} - \frac{1}{r}b - 1 = \frac{1}{\varepsilon}a + r$$

$$a - b = -4 + 12 = 8 \quad \frac{1r}{14} \pm \dots -r + r = -\frac{b}{a} - 1$$

$$-\frac{b}{a} - 1 = -\frac{b}{a} - 1 \quad \frac{1}{\varepsilon}a = -r$$

$$a = -12$$

$$b = -4$$

$$y = r\alpha x^2 + \varepsilon x + \beta$$

$$\frac{\beta}{r\alpha a} = a\beta$$

$$r\alpha a r \beta = \beta$$

$$\frac{-\varepsilon}{r\alpha a} = a + \beta$$

$$r\alpha a r = 1$$

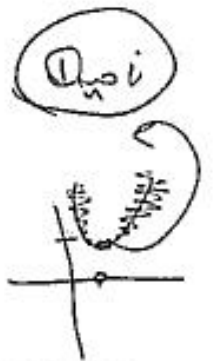
$$a r = \frac{1}{r\alpha}$$

$$\beta = 1$$

$$a = \frac{1}{\alpha} \Rightarrow$$

$$r\alpha x - \frac{1}{\alpha} x^2 + \varepsilon x + 1 = y$$

$$\left| \begin{array}{l} -\frac{b}{ra} = \frac{r}{\alpha} \\ -\frac{\varepsilon}{\alpha} + \frac{1}{\alpha} + 1 = \frac{q}{\alpha} \end{array} \right.$$



$$a + b = s \quad ab = p$$

$$\left. \begin{array}{l} s = a^2 + b^2 - 12 = s^2 - 2p - 12 \\ p = a + b - 1 = s - 1 \end{array} \right\} \Rightarrow \left. \begin{array}{l} s^2 - 2(s-1) - 12 = s \\ s^2 - 2s - 10 = s \end{array} \right\} \Rightarrow s^2 - 3s - 10 = 0 = (s-5)(s+2) \Rightarrow s = 5$$

$$s = 5 \Rightarrow a + b = 5$$

$$p = s - 1 = 4 \Rightarrow ab = 4$$