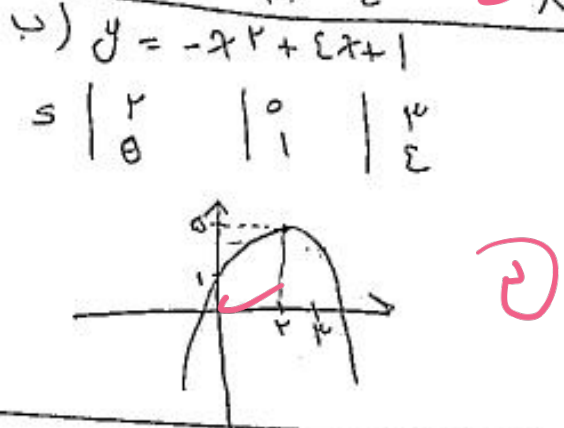
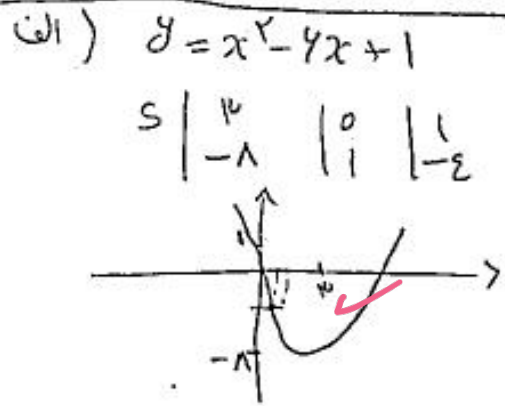


۱۹، ۵ تین

الف) $y = 12x^2 - 4x + 1 \xrightarrow{a > 0} \min \left| \frac{-b}{2a} \right| \Rightarrow \min \left(\frac{4}{24} = \frac{1}{6} \right)$

ب) $y = -2x^2 + 4x - 5 \xrightarrow{a < 0} \max \left| \frac{-b}{2a} = \frac{4}{-4} = -1 \right|$



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

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

$\alpha\beta = -2 \Rightarrow -1 \cdot 2 = -2$
 $4 + k - 18 - 2 = 0 \Rightarrow k = 16$
 $-2 + k + 9 - 2 = 0 \Rightarrow k = 5$

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

$|\sqrt{\alpha} - \sqrt{\beta}| = 1 \Rightarrow (\sqrt{\alpha} - \sqrt{\beta})^2 = 1 \Rightarrow \alpha + \beta - 2\sqrt{\alpha\beta} = 1$
 $2m - 2\sqrt{m} - 1 = 0 \Rightarrow (\sqrt{m} + 1)(\sqrt{m} - 1) = 0$
 $\Rightarrow m = 1$
 $2m^2 - x - 1 = 0 \Rightarrow \alpha\beta = \frac{c}{a} = \frac{-1}{2}$

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

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

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

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

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

$$a = 2$$

$$a_1 \text{ و } a_2 = \frac{-1 \pm \sqrt{92}}{2} = \frac{-1 \pm 2\sqrt{23}}{2}$$

$$a_1 = \frac{2\sqrt{23}}{2} = \sqrt{23}$$

$$a_2 = \frac{-1 - 2\sqrt{23}}{2}$$

$$x^2 - (a+1)x + a = 0 \xrightarrow{\text{ریشه های برابر}} \frac{\sqrt{\Delta}}{2a} = r \Rightarrow \frac{\sqrt{(a+1)^2 - 4a}}{2(a-1)} = r \Rightarrow (a-1)^2 = 4$$

$$(a-1-2)(a-1+2) = 0 \Rightarrow (a-3)(a+1) = 0 \Rightarrow a = -1 \text{ و } a = 3$$

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

$$\text{فاصله} = |r_2 - r_1| = |2\varepsilon - \varepsilon| = \varepsilon \Rightarrow r_2 = b = 2\varepsilon$$

$$\sqrt{100 - \varepsilon b} = r$$

$$b = 2\varepsilon$$

$$y = -ax^2 + ax + r$$

$$s = \left| \frac{\frac{a}{-2a} - \frac{1}{r}}{\frac{a+1}{\varepsilon}} \right|$$

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

$$a - b = -4 + 12 = 8$$

$$\frac{11r}{14} \pm \dots = -\frac{b}{a} - 1$$

$$b = -4$$

$$y = 2a^2x^2 + \varepsilon x + \beta$$

$$\frac{\beta}{20a} = a\beta \Rightarrow 20a^2\beta = \beta$$

$$\frac{-\varepsilon}{20a} = a + \beta$$

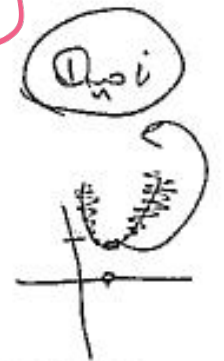
$$\beta = 1$$

$$20a^2 = 1$$

$$a = \pm \frac{1}{\sqrt{20}}$$

$$20x - \frac{1}{20}x^2 + \varepsilon x + 1 = y$$

$$s = \left| \frac{-\frac{b}{2a} = \frac{r}{2}}{-\frac{\varepsilon}{20} + \frac{1}{20} + 1 = \frac{q}{20}} \right|$$



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

$$s = a^2 + b^2 - 12 = s^2 - 2p - 12$$

$$p = a + b - 1 = s - 1 \Rightarrow p = s - 1$$

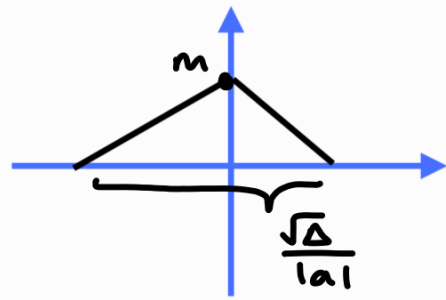
$$s^2 - 2(s - 1) - 12 = s$$

$$s^2 - 2s - 10 = s$$

$$s^2 - 3s - 10 = 0 = (s - 5)(s + 2) \Rightarrow s = 5$$

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

$$S = \frac{1}{r} \times m \times \sqrt{m^2 + r^2 - 2rm} = \left| \frac{\mu}{r} \right|$$



5

$$m|m-r| = |\mu| \rightarrow \begin{cases} m|m-r| = \mu & 1 \\ m|m-r| = -\mu & 2 \end{cases}$$

1 $m \geq r \rightarrow m^2 - rm - \mu = 0 \rightarrow m = r$ if $m < r \rightarrow \Delta < 0$ غَيْرَ

$\hookrightarrow m = -1$

2 $m \leq r \rightarrow -m^2 + rm + \mu = 0 \rightarrow m = -1$ if $m > r \rightarrow \Delta < 0$ غَيْرَ

$\hookrightarrow m = \mu$

$$m = r \rightarrow y = a^r + \mu a + r \rightarrow \mu S = -\frac{\mu}{r}$$

$$m = -1 \rightarrow y = a^r - a + r \rightarrow \mu S = -\frac{1}{r}$$