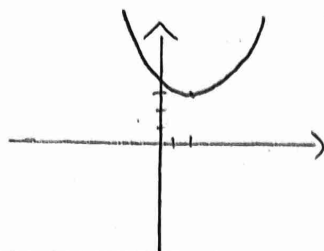


الف) $a > 0 \rightarrow \min$

$$x_{\min} = \frac{-(-4)}{2(1)} = 2 \rightarrow y_{\min} = 3$$

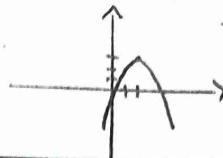
$\Delta < 0 \rightarrow$ ریشه ندارد



ب) $a < 0 \rightarrow \max$

$$x_{\max} = \frac{-(-4)}{2(-1)} = 2 \rightarrow y_{\max} = 3$$

$$\Delta > 0 \rightarrow x = \frac{-(-4) \pm \sqrt{4}}{-2} \rightarrow x = 2 \pm \sqrt{3}, 2 - \sqrt{3}$$



الف) $\Delta > 0 \rightarrow (m+1)^2 - 4(1)(\frac{1}{2}m+3) > 0 \rightarrow m^2 - 2m - 10 > 0 \rightarrow m \in (-\infty, -3) \cup (5, +\infty)$

ب) $\Delta = 0 \rightarrow m^2 - 2m - 10 = 0 \rightarrow (m-5)(m+3) = 0 \rightarrow m = 5, -3$

ج) $\Delta < 0 \rightarrow m^2 - 2m - 10 < 0 \rightarrow m \in (-3, 5)$

د) $\Delta > 0 \rightarrow m^2 - 2m - 10 > 0 \rightarrow m \in (-\infty, -3) \cup (5, +\infty)$

الف) $\Delta > 0, S < 0, P > 0 \rightarrow m \in \emptyset$

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

$\rightarrow 4m^2 - 4m + 12 > 0 \rightarrow m \in \mathbb{R}$

$S < 0 \rightarrow \frac{2(m+1)}{m-2} < 0 \rightarrow m \in (-1, 2)$

$P > 0 \rightarrow \frac{1}{m-2} > 0 \rightarrow m > 2$

ب) $\Delta > 0, S < 0, P < 0$

$\Delta > 0 \rightarrow 4m^2 - 4m + 12 > 0 \rightarrow m \in \mathbb{R}$

$S < 0 \rightarrow \frac{2(m+1)}{m-2} < 0 \rightarrow m \in (-1, 2)$

$P < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m < 2$

$\mathbb{R} \cap (-1, 2) \cap (-\infty, 2) \rightarrow m \in (-1, 2)$

الف) $P < 0, \Delta > 0$

$\Delta > 0 \rightarrow 4m^2 - 4m + 12 > 0 \rightarrow m \in \mathbb{R}$

$P < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m < 2$

$\mathbb{R} \cap (-\infty, 2) \rightarrow m \in (-\infty, 2)$

ب)

$-\frac{b}{2a} = -2 \rightarrow \frac{-2m-2}{m-2} = 2$

$-2m-2 = 2m-4 \rightarrow 4m = 2$

$\rightarrow m = \frac{1}{2}$

$\Delta > 0 \rightarrow \sin^2 \alpha > 1, \sin^2 \alpha > 1 \rightarrow \sin^2 \alpha \geq 1 \rightarrow \sin \alpha = \pm 1$

$\sin \alpha = 1 \rightarrow \frac{1}{2}x^2 - 2x + \frac{1}{2} = 0 \rightarrow x = \frac{2 \pm \sqrt{0}}{\frac{1}{2}} = 4 \rightarrow$ ریشه مثبت

$\sin \alpha = -1 \rightarrow \frac{1}{2}x^2 + 2x + \frac{1}{2} = 0 \rightarrow x = \frac{-2 \pm \sqrt{0}}{\frac{1}{2}} = -4 \rightarrow$ ریشه من

$$rx^r - rx - 1 \rightarrow r - r - 1 = 0 \rightarrow rx^r - rx - 1 = (x-1)(rx+1)$$

$$rx^r - rx - 0 \rightarrow r - 0 = -r \rightarrow rx^r - rx - 0 = (x+1)(rx-0)$$

$$1 - x^r = -(x-1)(x+1)$$

$$\rightarrow \frac{(rx^r - rx - 1)(rx^r - rx - 0)}{1 - x^r} = - (rx+1)(rx-0) = -4x^r + 1rx + 0$$

$$y_{\max} = -4\left(\frac{1}{r}\right)^r + 1r\left(\frac{1}{r}\right) + 0 = \frac{-149}{r^r} + \frac{r^{r+1}}{r^r} + 0 = \frac{r^{r+1}}{r^r}$$

$$r(S) - v = 0P$$

$$S = \frac{m+r}{m}, p = -\frac{r}{m} \left\{ \begin{array}{l} \frac{y - rm}{m} = -\frac{1}{m} \rightarrow y - rm = -1 \rightarrow m = r \end{array} \right.$$

$$\rightarrow rx^r - 4x - r = 0 \Rightarrow \alpha^r + \beta^r = S^r - rP = \frac{9}{r} + 1 = \frac{1r}{r}$$

$$\frac{r\alpha + \beta^r}{\alpha\beta^r} = \frac{r\alpha}{\alpha\beta^r} + \frac{\beta^r}{\alpha} = \frac{r\alpha}{\alpha p^r} + \frac{\beta^r}{\alpha} = \frac{\alpha}{\alpha} + \frac{\beta^r}{\alpha} = \frac{S - rPS}{\alpha}$$

$$p = r, S = 0 \rightarrow S - rPS = 90 \rightarrow \frac{90}{\alpha} = 19$$

$$x = r \rightarrow y = r(r) + 10 = 1r, x = -r \rightarrow y = r(-r) + 10 = r, C = r$$

$$\rightarrow y_1 = ax^r + bx + r \xrightarrow{x=-r} 9a - rb + r = r, \underline{x=r} \rightarrow 9a + rb + r = 1r$$

$$b = ra \rightarrow 10a = 10 \rightarrow a = 1, b = r \Rightarrow y_1 = x^r + rx + r$$

$$\rightarrow -\frac{b}{ra} = -\frac{r}{r} \xrightarrow{C, W, P} x = -\frac{r}{r}$$

$$rx^r + (m+1)x + m + 4 = x \rightarrow rx^r + mx + m + 4 = 0$$

$$\Delta = 0 \rightarrow m^r - 1m - 11 = 0 \rightarrow (m-1r)(m+r) = 0 \Rightarrow m = 1r, -r$$