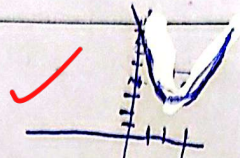
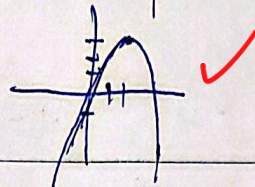


الف) $x^2 - 2x + 1 \rightarrow x_{min} = 1, y_{min} = 0$



(۲)

ب) $-x^2 + 2x - 1 \rightarrow x_{max} = 1, y_{max} = 0$



$\Delta > 0 \rightarrow (m+1)^2 - f(2)(\frac{1}{2}m+1) = -m^2 + 2m + 1 - fm - 1 = m^2 - 2m - 1 = (m-2)(m+1) > 0$ (الف)

$\Delta = 0 \rightarrow (m+1)^2 - f(2)(\frac{1}{2}m+1) = 0 \rightarrow m^2 - 2m - 1 = 0 \rightarrow (m-2)(m+1) = 0 \rightarrow m = 2$ (ب)

$\Delta < 0 \rightarrow m^2 - 2m - 1 < 0 \rightarrow (m+1)(m-2) < 0 \rightarrow m \in (-1, 2)$ (ج)

$\Delta > 0 \rightarrow m^2 - 2m - 1 > 0 \rightarrow m \in (-\infty, -1] \cup [2, +\infty)$ (د)

$y = (m-2)x^2 - 2(m+1)x + 1$

$\frac{c}{a} > 0$ و $\Delta > 0$, $-\frac{b}{a} < 0 \rightarrow \Delta = f(m+1, 2m) - f(m-2, 1) = 6m^2 - 32m + 17 \rightarrow \Delta < 0$ (الف)

$\frac{c}{a} = \frac{1}{m-2} > 0 \rightarrow m > 2$ $\frac{2m+1}{m-2} < 0 \rightarrow m < -1 \Rightarrow m \in (-1, 2)$ (ب)

$y = (m-2)x^2 - 2(m+1)x + 1$ $\frac{c}{a} < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m < 2$ (الف)

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

$\frac{2}{p}x^2 - (2\sin\psi)x + \frac{w}{p} = 0 \rightarrow b^2 - 4ac = 4\sin^2\psi - 4(\frac{2}{p})(\frac{w}{p}) = 4\sin^2\psi - \frac{8w}{p^2} \geq 0$ (الف)

$\sin^2\psi \geq 1 \rightarrow \sin\psi = \pm 1 \Rightarrow \sin\psi = 1 \rightarrow \frac{2}{p}x^2 - 2x + \frac{w}{p} = 0 \rightarrow 2x^2 - 2px + w = 0$

$\Delta = (-2)^2 - 4(2)(\frac{w}{p}) = 0 \rightarrow x = \frac{1}{2} \frac{w}{p} = \frac{w}{2p}$ (ب)

$\sin\psi = -1 \rightarrow \frac{2}{p}x^2 + 2x + \frac{w}{p} = 0 \rightarrow 2x^2 + 2px + w = 0 \rightarrow \Delta = 0 \rightarrow x = -\frac{w}{2p}$ (ج)

$$y = \frac{(r^n - rn - 1)(r^n - rn - \omega)}{1 - r^n} \rightarrow \frac{(r^n - 1)(r^n - \omega)(r^n + 1)}{1 - r^n} = -(r^n - \omega)(r^n + 1)$$

$$y(n) = -rn^r + l^n n + \omega \rightarrow n_{\max} = \frac{1^n}{1^r} \rightarrow y_{\max} = -r\left(\frac{1^n}{1^r}\right)^r + l^n\left(\frac{1^n}{1^r}\right) + \omega = \frac{r \cdot 1^n}{1^r}$$

$$m r^n - (m+1)n - r \quad S = \frac{m+r}{m}, p = -\frac{r}{m}$$

$$r^n S = V + \omega P \rightarrow r^n \frac{m+r}{m} = V + \frac{\omega}{m} \rightarrow r^n m + r = V m - \omega$$

$$\rightarrow m = r \Rightarrow S = \frac{r}{r}, p = -\frac{r}{r}$$

$$a^r + b^r = s^r - r p = \left(\frac{r}{r}\right)^r - r\left(-\frac{r}{r}\right) = \frac{r}{r} + 1 = \frac{1^n}{r^n}$$

$$S = \omega, P = r \quad ab = r \rightarrow \frac{1}{b} = \frac{r}{a} \rightarrow \frac{1}{b^r} = \frac{a^r}{r}$$

$$\rightarrow \frac{r a^r b^r}{\omega b^r} = \frac{r a}{\omega b^r} + \frac{b^r}{\omega} = \frac{r a}{\omega} \times \frac{a^r}{r} + \frac{b^r}{\omega} = \frac{a^r + b^r}{\omega}$$

$$a \frac{s^r - r p}{\omega} = \frac{r \omega}{\omega} = 1$$

$$y_1 = a r^n + b n + c, y_r = r^n + l_0$$

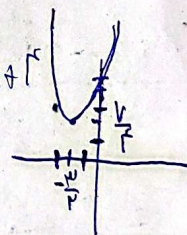
$$c = r$$

$$\begin{cases} a(r)^r + b(r) + c = r(r) + l_0 \\ a(-r)^r + b(-r) + c = r(-r) + l_0 \end{cases}$$

$$\rightarrow \begin{cases} r a + b = \omega \\ r a - b = 6 \end{cases}$$

$$\rightarrow a = 1, b = r \Rightarrow a r^n + b n + c = r^n + n + r$$

$$\Rightarrow \frac{b}{r a} = \frac{r}{r}$$



$$y = r^n + (m+1)n + m + r$$

$$\begin{cases} y = r^n + (m+1)n + m + r \\ y = n \end{cases} \rightarrow r^n + m n + (m+r) \rightarrow \Delta = 0 \rightarrow m^r - f(r) = 0$$

$$\rightarrow m^r - \Lambda m - f \Lambda = 0 \rightarrow m = \frac{\Lambda \pm \sqrt{4f + 19r}}{r} = \frac{\Lambda \pm \sqrt{r \omega}}{r} \Rightarrow m = -f$$