

$$\sin \alpha = 1 \rightarrow \alpha = \frac{\pi}{2}$$

$$\frac{r_{n+1}}{r} = (r \sin \alpha)_{n+1} + \frac{r}{r} \quad (1)$$

$$\Delta = r \sin \alpha - r = 0 \quad \sin \alpha = \pm 1$$

$\sin \alpha = 1$ $\Rightarrow$ $\alpha = \frac{\pi}{2}$

(2) $\frac{(r_{n+1} - r_{n-1}) (r_{n+1} - r_n - a)}{r_{n+1} - r_n}$

مقدار $r_{n+1} - r_n$ $\rightarrow$ $n-1$

$r_{n+1} - r_n - a$ $\rightarrow$ $n+1$

$r_{n+1} - r_n$ $\rightarrow$ $n-1$

$r_{n+1} - r_n - a$ $\rightarrow$ $n+1$

$r_{n+1} + r_n$ $\rightarrow$ $n-1$

$-a n - a$

$$-(r_{n+1} + 1) (r_n - a)$$

$$-4(n + \frac{1}{2}) (n - \frac{a}{4}) = -4(n^2 - \frac{1}{4}n - \frac{a}{4})$$

$$\frac{-\Delta}{4a} = \frac{219}{144}$$

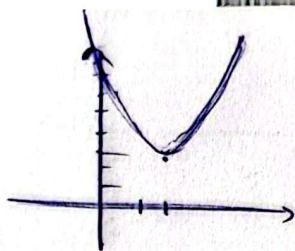
$$\frac{r_{n+1}}{r} = v + \omega p \rightarrow \frac{r}{3}$$

$$r_{n+1} + 4 = v_{n+1} - 10$$

$$14 = r_{n+1} \Rightarrow n = 4$$

$$r_{n+1} - 4n - 2 = 0$$

$$r_{n+1} - 4n = \frac{(n+1)r}{n^2} + \frac{4}{n} = \frac{219}{14} + \frac{14}{14} = \frac{233}{14}$$



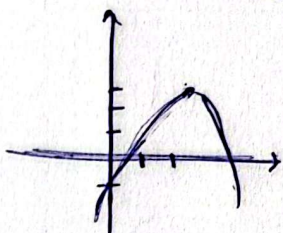
$$x^2 - 2x + 4 = (x-1)^2 + 3$$

کتابخانه ملی ایران

(الف)

(ب)

$$-x^2 + 2x - 1 = -(x^2 - 2x + 1) = -(x-1)^2 + 3$$



(ب)

$$x^2 + (m+1)x + \frac{1}{m} + 2 = 0$$

$$\Delta \geq 0 \quad (m+1)^2 - 4\left(\frac{1}{m} + 2\right) = m^2 + 1 + 2m - \frac{4}{m} - 8 = m^2 + 2m - \frac{4}{m} - 7 \quad (\text{الف})$$

$$(-\infty, -2) \cup (2, +\infty)$$

$$m^2 + 2m - 1 \geq 0 \quad \frac{1}{m} \geq 0 \quad \frac{1}{m} \geq 0 \quad \frac{1}{m} \geq 0$$

$$\Delta = 0 \Rightarrow m = -2 \text{ یا } 2$$

(ب)

$$\Delta < 0 \Rightarrow m \in (-2, 2)$$

(ب)

$$(-\infty, -2] \cup [2, +\infty)$$

(ب)

$$\Delta \geq 0 \Rightarrow x^2 + (m+1)x + \frac{1}{m} + 2 = 0 \quad (m-2)x^2 - 2(m+1)x + 1 = 0$$

$$P \geq 0 \Rightarrow \frac{1}{m-2} \geq 0$$

$$S \geq 0 \Rightarrow \frac{2(m+1)}{m-2} \geq 0$$

$$\left. \begin{array}{l} m > 2 \\ m+1 < 0 \\ m < -1 \end{array} \right\} \emptyset$$

$$m^2 - 1 \geq 0$$

$$\frac{1}{m} \geq 0$$

$$\Delta \geq 0 \quad \checkmark$$

$$\left. \begin{array}{l} S \geq 0 \Rightarrow \frac{m+1}{m-2} \geq 0 \Rightarrow m+1 \geq 0, m > -1 \\ P \geq 0 \Rightarrow \frac{1}{m-2} \geq 0 \Rightarrow m-2 < 0, m < 2 \end{array} \right\} [-1, 2)$$

$$P \geq 0 \Rightarrow m-2 \geq 0, m \geq 2$$

از هر چهار ناحیه عبور کند

$$\Delta \geq 0 \Rightarrow \checkmark$$

$$\frac{x(m+1)}{x(m-2)} = -2$$

$$\frac{x(m+1)}{m-2} = -2 \quad \frac{x}{m-2} = -2 \quad m=1$$

(ب)

$$an^r + bn + c \rightsquigarrow C = r$$

$$r_{m+1}$$

$$an^r + (b-r)n + c - 1 = 0$$

$$\left(\begin{array}{l} a = -r \\ a = r \end{array} \right)$$

$$a = r$$

$$ra - (b-r)r + r - 1 = 0$$

$$ra - rb + r + r - 1 = 0$$

$$ra = rb$$

$$ra = b$$

$$ra + (b-r)r + r - 1 = ra + rb - 1 = 0$$

$$ra + ra = 1$$

$$a = 1$$

$$b = r$$

$$\Rightarrow n = \frac{-b}{ra} = \frac{-r}{r}$$

$$y = n$$

$$y = r_{m+1} + (m+1)n + m+r$$

$$r_{m+1} + mn + m + r = 0$$

$$m^2 - 1m - r = 0$$

$$(m-1)(m+r)$$

$$m = 1, -r$$

$$10$$

$$1, r$$

$$\rightarrow r$$