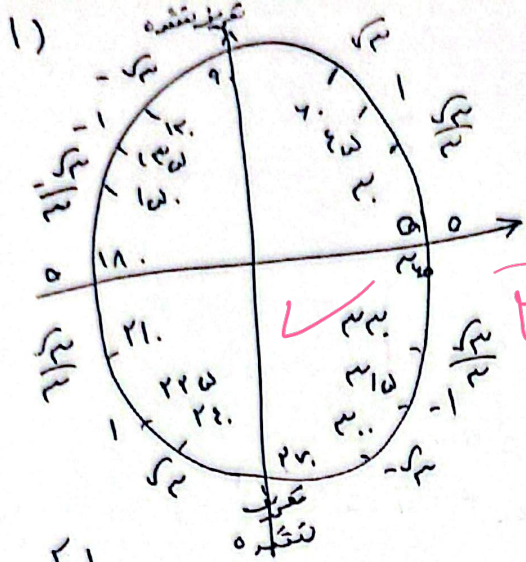




رأى كليلد

٢. انهن

٢)

الف) $\sin \frac{\pi}{5} + \cos \pi + \tan \frac{3\pi}{5} =$

$$\frac{1}{2} + 0(-1) - 2 = -2/2$$

ب) $-\cos \frac{5\pi}{7} + \sin \frac{2\pi}{7} - 3 \sin \frac{4\pi}{7} =$

$$\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} - 0.2(-\frac{\sqrt{3}}{2}) = \frac{5\sqrt{3}}{2}$$

ج) $\cos \frac{4\pi}{5} + 2 \cos \frac{\pi}{5} - 2 \tan \frac{5\pi}{7} =$

$$-\frac{\sqrt{3}}{2} + \frac{3\sqrt{3}}{2} - 2(-\frac{\sqrt{3}}{2}) = \frac{5\sqrt{3}}{2}$$

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{5}) =$

$$\cos(0) + \sin(\frac{\pi}{5}) = 1 + 1 = 2$$

2)

$$f(x) = \begin{cases} x^r + \varepsilon x & x \geq a \\ rx + a + r & x \leq a \end{cases}$$

$$x = a \rightarrow a^r + \varepsilon a = ra + r$$

$$a^r + a - r = 0$$

$$(a+r)(a-1) = 0$$

$$\begin{cases} a = 1 \quad \checkmark \leftarrow \text{a.p.} \\ a = -r \end{cases}$$

$$f(1) = 1 + \varepsilon \quad \checkmark \leq \omega$$

$$3) \quad f(x) = \begin{cases} rx^r - b & |x+1| \geq r \\ a + rx & -r \leq x \leq -1 \end{cases}$$

$$x = -r \rightarrow$$

$$1 - b = a - r$$

$$r = a + b \quad \checkmark$$

4)

الف)

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

$\rightarrow$

$$x^r - \varepsilon x^r \neq 0$$

$$x^r(x - \varepsilon) \neq 0$$

$$x \neq 0$$

$$x \neq \varepsilon$$

$$D_f = \mathbb{R} - \{0, \varepsilon\}$$

$$\frac{1}{x^r + \varepsilon x^r + rx + r}$$

$\rightarrow$

$$x^r + \varepsilon x^r + rx + r \neq 0$$

$$D = \mathbb{R} - \{-r\}$$

$$x^r + \varepsilon x^r + rx + r \neq 0$$

$$(x + \varepsilon)(x + r) \neq 0$$

$$x(x + \varepsilon + 1) + r(x + r + 1) \neq 0 \rightarrow$$

$$x \neq -r$$

7)

$$y = \sqrt{x^2 - 1} + \sqrt{x - 2}$$

$$\sqrt{x^2 - 1} \geq 0$$

$$(x - 1)(x + 1) \geq 0$$

$$\frac{-1}{+0} - \frac{1}{-0} + \textcircled{1}$$

$$x - 2 \geq 0$$

$$x \geq 2 \textcircled{2}$$

$$\Rightarrow \textcircled{1} \cap \textcircled{2} \Rightarrow x \geq 2$$

✓ 1)

$$y = \sqrt{4x - a} + \sqrt{b - 5x}$$

همه $x = 2$ — هر دو رادیکال
برای صفری شود
چون مثبت داشته است

$$\Rightarrow 12 - a = 0$$

$$a = 12$$

$$b - 7 = 0$$

$$b = 7$$

$$\frac{b}{a} = \frac{1}{2}$$

Λ)

$$y = \sqrt{\frac{x^2 - x - 6}{x^2 - 12x + 36}}$$

$$= \sqrt{\frac{(x - 3)(x + 2)}{(x^2 - 6)(x^2 - 6)}}$$

$$= \sqrt{\frac{(x - 3)(x + 2)}{(x - 2)(x + 2)(x - 3)(x + 3)}}$$

$$D_f = (-\infty, -2) \cup (2, 3) \cup (3, +\infty)$$

ب

$$y = \sqrt{\frac{x^3 - 2x^2 - 5x + 6}{x^3 + 2x^2 - 5x - 6}}$$

یکی از ریشه ها $\Rightarrow$ جمع ضرایب فرد $\rightarrow$ $x^3 - 2x^2 - 5x + 6 \rightarrow$ جمع ضرایب فرد

$$\begin{array}{r} x^3 - 2x^2 - 5x + 6 \\ - (x^3 - x^2) \\ \hline -x^2 - 5x + 6 \\ + (x^2 + 2x) \\ \hline -3x + 6 \\ + 2x \\ \hline -x + 6 \end{array}$$

$$\begin{array}{r|l} x^3 - 2x^2 - 5x + 6 & x - 1 \\ - (x^3 + x^2) & x^2 - x - 6 \\ \hline -x^2 - 5x + 6 & \\ + (x^2 - x) & \\ \hline -6x + 6 & \\ + (6x - 6) & \\ \hline 0 & \end{array}$$

$x^3 + 2x^2 - 5x - 6 \Rightarrow$ جمع ضرایب فرد $\Rightarrow x = -1$
یکی از ریشه ها $\Rightarrow$ جمع ضرایب زوج

$$\begin{array}{r|l} x^3 + 2x^2 - 5x - 6 & x + 1 \\ - (x^3 - x^2) & x^2 + x - 6 \\ \hline x^2 - 5x - 6 & \\ - (x^2 - x) & \\ \hline -6x - 6 & \\ + (6x + 6) & \\ \hline 0 & \end{array}$$

$$\Rightarrow y = \sqrt{\frac{(x+1)(x-3)(x+2)}{(x+1)(x+6)(x-2)}}$$

$$\rightarrow \frac{0}{-3} \quad \frac{-2}{-1} \quad \frac{1}{2} \quad \frac{2}{\infty}$$

$$D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$$

9) $y = \sqrt{2[x] - 4}$

$$2[x] - 4 \geq 0$$

$$[x] \geq 2$$

$$x \geq 2$$

1

$$y = \sqrt{2[x] - 4}$$

$$2[x] - 4 \geq 0$$

$$[x] \geq 2$$

$$x \geq 2$$

1.1

$$y = \sqrt{\frac{x+1}{x-4}} + \sqrt{\frac{7-x}{x^2+2x+4}}$$

$$\frac{x+1}{x-4} \geq 0$$

$$\frac{x+1}{x-4} \geq 0$$

$$\frac{x+1}{x-4} \geq 0$$

(1)

$$\frac{7-x}{x^2+2x+4} \geq 0$$

$$\frac{7-x}{x^2+2x+4} \geq 0$$

(2)

صورت
مخرج
بزرگتر از صفر

$$D_f = (1) \cap (2) = [-1, 2] - \{3\}$$

$$1) y = \sqrt{[x] \in \mathbb{R}} + \sqrt{[y] - [x]}$$

$$[x] \in \mathbb{R}$$

$$[x] \geq 0$$

$$x \geq 0 \quad (1)$$

$$[y] - [x] \geq 0$$

$$[x] \leq [y]$$

$$x \leq y \quad (2)$$

$$D_f = (1) \cap (2)$$

$$= \emptyset$$

2)

$$y = \frac{\sqrt{y - x}}{\sqrt{4x - 1}}$$

$$y - x \geq 0$$

$$x \leq y$$

$$4x - 1 \geq 0$$

$$x \geq \frac{1}{4}$$

$$D_f = \left(\frac{1}{4}, y\right]$$