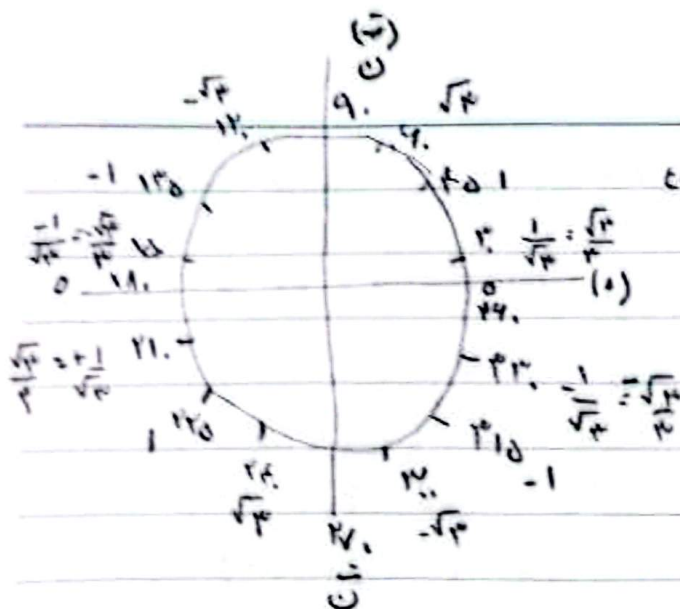


دایا و دایا دایا



$$\tan = \frac{\sin}{\cos}$$

1.

$$\text{الف) } \sin \frac{\pi}{4} + \cos \pi + r \tan \frac{\pi}{4} = \frac{1}{r} + 1 + r(-1) = \frac{1}{r} \quad 12$$

$$\text{ب) } -\cos \frac{5\pi}{4} + \sin \frac{\pi}{4} - r \sin \frac{\pi}{4} = -(-\frac{\sqrt{2}}{2}) + \frac{\sqrt{2}}{2} - r(-\frac{\sqrt{2}}{2}) = \frac{5\sqrt{2}}{2}$$

$$\text{ج) } \cot \frac{\pi}{4} + r \cot \frac{\pi}{4} - r \tan \frac{5\pi}{4} = -\frac{1}{\sqrt{2}} + r(\frac{1}{\sqrt{2}}) - r(-\frac{1}{\sqrt{2}}) = \frac{r}{\sqrt{2}} = \frac{r\sqrt{2}}{2}$$

$$\text{د) } \cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) = 1 + \sin(\pi \times \frac{1}{2}) = 1 + \sin(\frac{\pi}{2}) = 1 + 1 = 2$$

$$f(n) \begin{cases} n^r + r n & n \geq a \\ r n + a + r & n \leq a \end{cases} \quad \begin{aligned} a^r + r a &= r a + a + r \\ \rightarrow a^r + a - r &= 0 \quad (a+r)(a-1) = 0 \\ a &= -r \\ a &= 1 \end{aligned} \quad 13$$

$$a = -r \Rightarrow \begin{cases} n^r + r n & n \geq -r \\ r n & n \leq -r \end{cases} \quad f(1) \Rightarrow n^r + r n \Rightarrow 1 + r = 0$$

$$a = 1 \Rightarrow \begin{cases} n^r + r n & n \geq 1 \\ r n + r & n \leq 1 \end{cases}$$

$$f(n) = \begin{cases} r n^2 - b & |n+1| \geq r \rightarrow \begin{aligned} n+1 \geq r &\rightarrow n \geq 1 \\ n+1 \leq -r &\rightarrow n \leq -r-1 \end{aligned} \\ a + r n & -r \leq n \leq -1 \end{cases} \quad 14$$

$$n = -r \Rightarrow 1 - b = a - r \Rightarrow a + b = r^2$$

$$\text{الف) } y = \frac{1}{x^3 - 4x^2} \quad x^3 - 4x^2 \neq 0 \quad x^2(x-4) \neq 0 \quad 15$$

$\downarrow$ $\downarrow$
 0 4

$$\longrightarrow D = \mathbb{R} - \{0, 4\}$$

$$\text{ب) } y = \frac{1}{2x^3 + 5x^2 + 2x + 4}$$

$$2x^3 + 5x^2 + 2x + 4 \neq 0$$

$$x(2x^2 + 5x + 2) \neq 0$$

$$x(2x^2 + 4x + x + 2) \neq 0$$

$$x(2x(x+2) + (x+2)) \neq 0$$

$$x(x+2)(2x+1) \neq 0 \quad D = \mathbb{R} - \left\{-\frac{1}{2}, -2, 0\right\}$$

$\downarrow$ $\downarrow$ $\downarrow$
 $-\frac{1}{2}$ -2 0

$$\text{الف) } y = \sqrt{x^2 + 1} + \sqrt{x-2} \quad 19$$

$$x^2 - 1 \geq 0 \quad (x-1)(x+1) \geq 0$$

$$\frac{-1}{+} \quad \frac{1}{-} \quad (-\infty, -1] \cup [1, +\infty)$$

$$x-2 \geq 0 \quad x \geq 2 \quad [2, +\infty)$$

$$\left. \begin{array}{l} (-\infty, -1] \cup [1, +\infty) \\ [2, +\infty) \end{array} \right\} \Rightarrow [2, +\infty)$$

$$\text{ب) } y = \frac{\sqrt{4-4x}}{\sqrt{4x-4}}$$

$$4-4x \geq 0 \rightarrow x \leq 1 \quad (-\infty, 1]$$

$$4x-4 > 0 \rightarrow \frac{4x}{4} > \frac{4}{4} \rightarrow x > 1 \quad \left(\frac{1}{4}, +\infty\right)$$

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

$$y = \sqrt{4x-a} + \sqrt{b-4x} \quad D_f = \{2\}$$

$$12-a = 0 \quad a = 12 \quad -V$$

$$b-4 = 0 \quad b = 4$$

$$\frac{b}{a} = \frac{4}{12} = \frac{1}{3}$$

$$\text{الف) } y = \sqrt{\frac{x^2 - x - 4}{x^2 - 13x^2 + 44}} \quad \frac{x^2 - x - 4}{x^2 - 13x^2 + 44} \geq 0 \quad \Delta$$

$$\frac{(x^2 - 4)(x^2 - 13)}{(x^2 - 4)(x^2 - 13)} \geq 0 \quad \begin{array}{cccc} - & + & - & + \\ + & - & - & + \end{array}$$

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

$$\text{ب) } \sqrt{\frac{x^3 - 2x^2 - 5x + 4}{x^3 + 2x^2 - 5x - 4}} \quad \frac{x^3 - 2x^2 - 5x + 4}{x^3 + 2x^2 - 5x - 4} \geq 0$$

$$\frac{(x-1)(x+2)(x-2)}{(x+1)(x-2)(x+2)} \geq 0$$

$$\begin{array}{r|l} x^3 - 2x^2 - 5x + 4 & x-1 \\ \hline - x^3 + x^2 & x^2 - x - 4 \\ \hline - x^2 - 5x + 4 & \downarrow \\ - x^2 + x & (x+2)(x-2) \\ \hline - 4x + 4 & \\ - 4x + 4 & \\ \hline 0 & \end{array} \quad \begin{array}{r|l} x^3 + 2x^2 - 5x - 4 & x+1 \\ \hline - x^3 + x^2 & x^2 + x - 4 \\ \hline x^2 - 5x - 4 & (x-2)(x+2) \\ - x^2 + x & \\ \hline - 4x - 4 & \\ - 4x - 4 & \\ \hline 0 & \end{array}$$

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

$$\text{الف) } y = \sqrt{2[x] - 1} \quad \begin{array}{l} 2[x] - 1 \geq 0 \\ [x] \geq \frac{1}{2} \end{array} \quad \begin{array}{l} x \geq \frac{1}{2} \\ [x] \geq \frac{1}{2} \end{array} \quad [x] \geq \frac{1}{2} \quad x \geq \frac{1}{2} \quad [x] \geq \frac{1}{2}$$

$$\text{ب) } \sqrt{2[x] - 5} \quad \begin{array}{l} 2[x] - 5 \geq 0 \\ [x] \geq \frac{5}{2} \end{array} \quad \begin{array}{l} x \geq \frac{5}{2} \\ [x] \geq \frac{5}{2} \end{array} \quad [x] \geq \frac{5}{2} \Rightarrow x \geq \frac{5}{2}$$

$$\text{الف) } y = \sqrt{\frac{x+1}{|x-2|}} + \sqrt{\frac{4-x}{x^2+2x+2}} \quad \frac{x+1}{|x-2|} \geq 0 \quad -10$$

$$x+1 \geq 0 \quad x \geq -1$$

$$|x-2| \neq 0 \quad [-1, +\infty) - \{2\}$$

$$x-2 \neq 0$$

$$x \neq 2$$

$$\text{ب) } y = \sqrt{[x]-2} + \sqrt{2-[x]}$$

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

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

$$[x] \geq 2$$

$$[x] \leq 2$$

$$[2, +\infty)$$

$$(-\infty, 2]$$

مقاطع اشتراك

