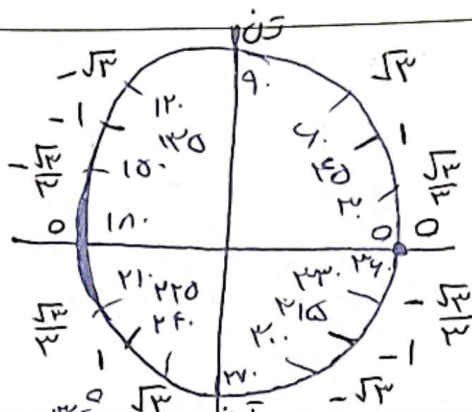




الف) $\sin \frac{\pi}{4} + \cos \frac{\pi}{2} + \tan \frac{\pi}{4} = \frac{1}{\sqrt{2}} + 0 + 1 = 1 + \frac{1}{\sqrt{2}}$

ب) $-\cos \frac{\pi}{4} + \sin \frac{\pi}{2} = -\frac{1}{\sqrt{2}} + 1 = 1 - \frac{1}{\sqrt{2}}$

ج) $\cot \frac{\pi}{4} + \tan \frac{\pi}{4} = 1 + 1 = 2$

د) $\cos(\sin \frac{\pi}{4}) + \sin(\pi \cos \frac{\pi}{4}) = \cos(\frac{1}{\sqrt{2}}) + \sin(0) = \cos(\frac{1}{\sqrt{2}}) + 0 = \cos(\frac{1}{\sqrt{2}})$

$f(x) = \begin{cases} x^2 + 4x & x \geq a \\ 2x + a + 2 & x \leq a \end{cases} \rightarrow f(1) = 1 \quad a) \cdot$

$f(1) = (1^2) + 4(1) = 5$

$x^2 + 4x = 2x + a + 2$ if $x = a$

$a^2 + 4a = 2a + a + 2 \quad a^2 + a - 2 = 0$
 $(a+2)(a-1) = 0$
 $a = -2$ or $a = 1$

$f(x) = \begin{cases} 2x^2 - b & |x+1| \geq 2 \\ a+2x & |x+1| < 2 \end{cases} \quad a+b=1$

$D \cap D_f = \mathbb{R} \quad 2x^2 - b = a + 2x \quad 1a - b = a - 9$
 $-10 \leq a \leq -8$
 $2x^2 = a + b$

الف) $y = \frac{1}{x^2 - 4x^2} \quad x^2 - 4x^2 \neq 0 \quad D_f = \mathbb{R} - \{0, 4\}$
 $\frac{x^2(x-4)}{0} \neq 0$

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

$2x^2 + 4x^2 + 2x + 4 \neq 0$
 $2x^2 + 2x + 4x^2 + 4 \neq 0$
 $2x(x+1) + 4(x^2+1) \neq 0$
 $(2x+4)(x^2+1) \neq 0$
 $x \neq -2$

الف) $y = \sqrt{x^2 - 1} + \sqrt{x - 2}$ $x^2 - 1 \geq 0 \Rightarrow x \geq 1$ $x \leq -1$ ① $D_1 \cap D_2 = [2, +\infty)$
 $x \geq 2$ ② $= D_f$

$$1) \frac{\sqrt{4-x}}{\sqrt{4x-4}} \quad \begin{array}{l} 4-x \geq 0 \\ x \leq 4 \\ 4x-4 \geq 0 \\ x \geq 1 \end{array} \quad \frac{1}{4} \leq x \leq 4 \quad D_f = \left[\frac{1}{4}, 4 \right]$$

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

$$4x \geq a \quad b \geq 4x$$

$$x \geq \frac{a}{4} \quad x \leq \frac{b}{4}$$

$$\left[\frac{a}{4}, +\infty\right) \cap \left(-\infty, \frac{b}{4}\right] = \{x\} \Rightarrow \frac{a}{4} \leq \frac{b}{4} \Rightarrow \frac{b}{a} \geq \frac{4}{4} = 1$$

[illegible]

$$\text{الف) } y = \sqrt{2[x] - 4} \rightarrow [x] \geq 2 \quad x \geq 2 \quad [2, +\infty)$$

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

$$\leadsto y = \sqrt{y[x] - x} \quad [x, +\infty)$$

$$\begin{array}{l} \vee [x] - 0 \geq \cdot \\ \vee [x] \geq 0 \end{array} \quad [x] \geq 1/5 \quad [x] \geq 1/2$$

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

$\hookrightarrow y = \sqrt{[x] - r} + \sqrt{r - [x]}$
 $[x] \leq r$
 $x \leq r$