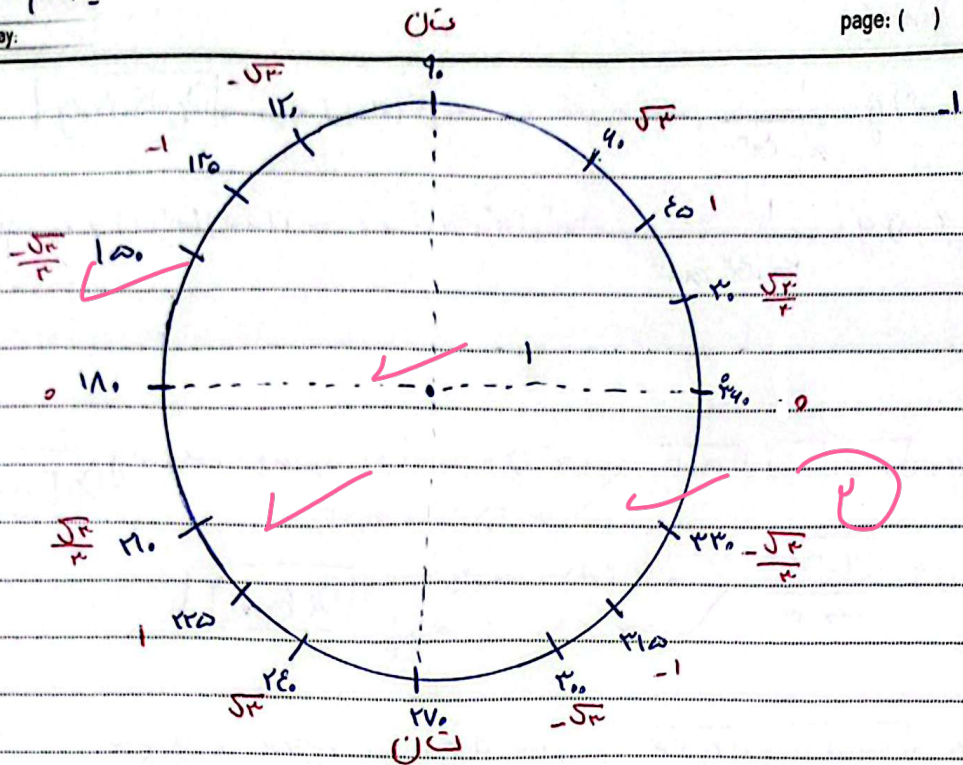




$$-2 + \frac{1}{2} = -\frac{3}{2}$$

الف) $\sin \frac{\pi}{4} + \cos \pi + \tan \frac{\pi}{4} \rightarrow \frac{1}{2} - 1 - 1 = \boxed{\frac{-3}{2}}$

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

1, 15

ج) $\cot \frac{\pi}{4} + 2 \cot \frac{\pi}{4} - 2 \tan \frac{\pi}{4} \rightarrow \frac{-\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - \sqrt{2} = \boxed{\frac{-\sqrt{2}}{2}}$

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

$a^2 + a \leq 2a + a + 1 \rightarrow a^2 + a - 1 \leq 0 \rightarrow a \in [-1, 2]$

$x^2 + 6x \geq 1 \rightarrow 1 + 6 \leq \boxed{15}$

2

$|a+1| \geq 2 \rightarrow a+1 \geq 2 \rightarrow a \geq 1 \Rightarrow 1 \leq b = a-1 \rightarrow \boxed{a+b = 2^2}$
 $|a+1| \geq 2 \rightarrow a+1 \leq -2 \rightarrow a \leq -3$

2

الف) $y = \frac{1}{x^2 - 4x^2} \rightarrow x^2 - 4x^2 \neq 0 \rightarrow x^2(x-2) \neq 0 \rightarrow D_f = \mathbb{R} \setminus \{0, 2\}$ P 5

ب) $y = \frac{1}{x^2 + 2x^2 + 2x + 2} \rightarrow 2x^2 + 2x^2 + 2x + 2 \neq 0 \rightarrow 2(x+1)(x+1) \neq 0 \rightarrow D_f = \mathbb{R} \setminus \{-1\}$ P

الف) $y = \sqrt{x^2 - 1} + \sqrt{x - 2} \rightarrow x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1, x \leq -1$
 $x - 2 \geq 0 \rightarrow x \geq 2$ P 9

ب) $y = \frac{\sqrt{4-x}}{\sqrt{4x-x}} \rightarrow 4-x \geq 0 \rightarrow x \leq 4$
 $4x-x \geq 0 \rightarrow x \geq \frac{1}{3}$ P 10

$y = \sqrt{4x-a} + \sqrt{b-2x} \rightarrow 4x-a \geq 0 \rightarrow a \leq 4x \rightarrow \frac{a}{4} \leq x$
 $b-2x \geq 0 \rightarrow b \geq 2x \rightarrow \frac{b}{2} \geq x$ 14

$\frac{a}{4} \leq x \rightarrow a \leq 4x$
 $\frac{b}{2} \geq x \rightarrow b \geq 2x \rightarrow \frac{b}{2} \geq \frac{a}{4} \rightarrow \frac{b}{a} \geq \frac{1}{2}$ P 15

الف) $y = \sqrt{\frac{x^2 - 1}{x^2 - 11x + 24}} \rightarrow \frac{(x-1)(x+1)}{x^2 - 11x + 24} \geq 0$
 $x^2 - 11x + 24 = (x-3)(x-8) \geq 0 \rightarrow (x-3)(x-8) \geq 0$
 $x \leq 3$ or $x \geq 8$ P 17

ب) $y = \sqrt{\frac{x^2 - 2x^2 - 2x + 4}{x^2 + 2x^2 - 2x - 4}} \rightarrow \frac{(x-1)(x-2)(x+2)}{(x+1)(x+2)(x-2)} \geq 0$
 $\frac{(x-1)}{(x+1)} \geq 0$
 $x \leq -1$ or $x \geq 1$ P 23

الف) $y = \sqrt{[x] - 2} \rightarrow [x] - 2 \geq 0 \rightarrow [x] \geq 2 \rightarrow [x] \geq 2 \rightarrow D_f = [2, +\infty)$ P 25

ب) $y = \sqrt{[x] - 2} \rightarrow [x] - 2 \geq 0 \rightarrow [x] \geq 2 \rightarrow [x] \geq 2 \rightarrow D_f = [2, +\infty)$ P 30

$$\text{الف) } y \leq \sqrt{\frac{x+1}{|x-1|}} + \sqrt{\frac{4-x}{x^2+x+1}}$$

$$\frac{x+1}{|x-1|} \geq 0 \rightarrow x \geq -1 \rightarrow [-1, +\infty) \setminus \{1\}$$

$$\frac{4-x}{x^2+x+1} \geq 0 \rightarrow 4-x \geq 0 \rightarrow x \leq 4 \rightarrow (-\infty, 4]$$

$$x^2+x+1 \rightarrow (x+1)^2 + 1 \rightarrow +\infty$$

$$\left\{ \cancel{D \neq \emptyset} [1, 1) \cup (1, 4] \right\}$$

$$\text{ب) } \sqrt{[x]-1} + \sqrt{1-[x]}$$

$$[x]-1 \geq 0 \rightarrow [x] \geq 1 \rightarrow x \geq 1 \rightarrow [1, +\infty)$$

$$1-[x] \geq 0 \rightarrow [x] \leq 1 \rightarrow x < 2 \rightarrow (-\infty, 2)$$

$$\left\{ D \neq \emptyset \right\}$$