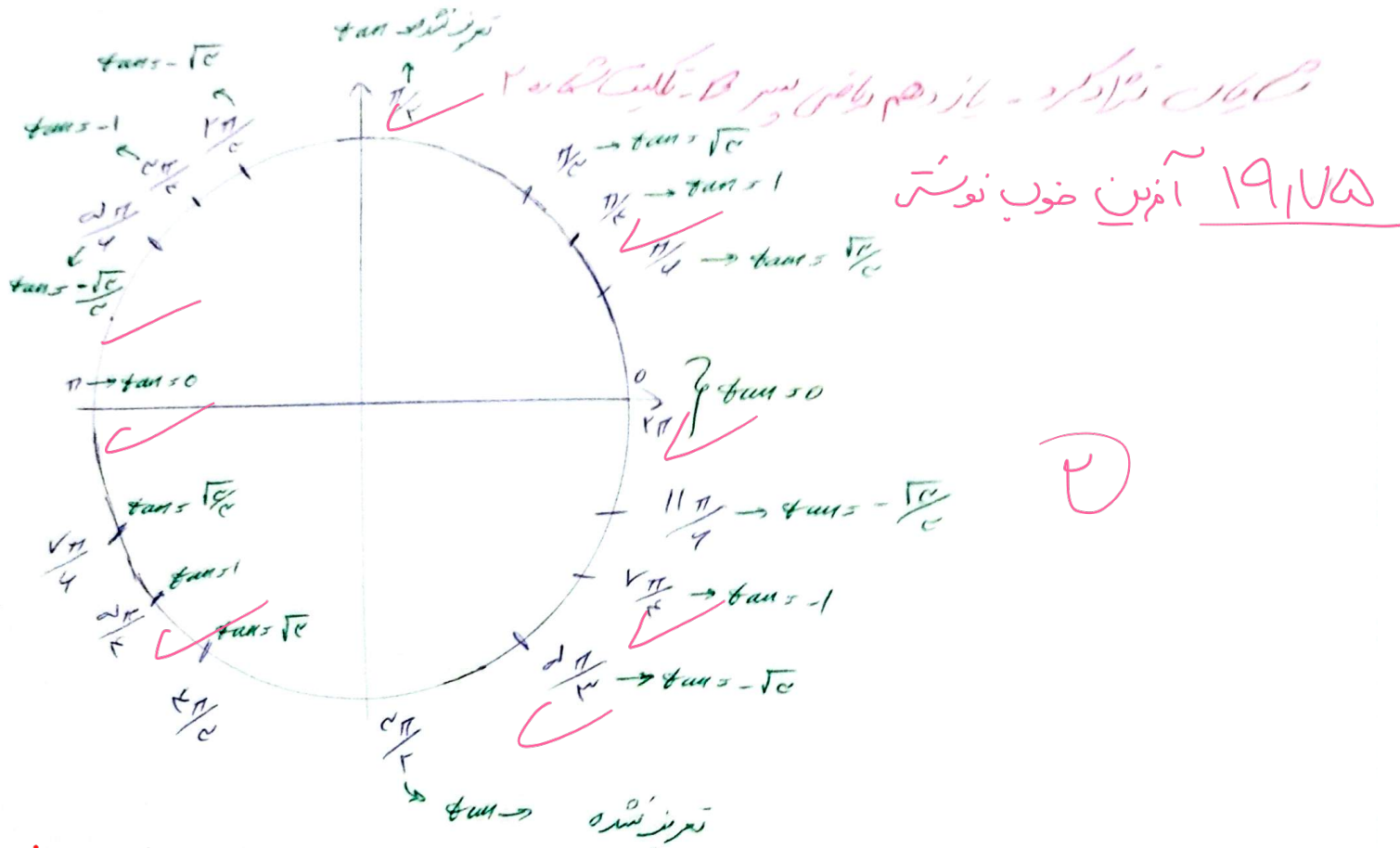




الف - ۲) $\sin \frac{\pi}{4} + \cos \pi + 2 \tan \frac{3\pi}{4} = \frac{1}{\sqrt{2}} + (-1) + 2(-1) = -\frac{3}{\sqrt{2}} \approx -2.12$

ب) $\frac{1}{\sqrt{2}} - 1 + 2(-1) = -\frac{1}{\sqrt{2}} \times$

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

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

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

$a^2 + 2a + 1 = a + 2 \Rightarrow a^2 + a - 2 = 0 \Rightarrow \begin{cases} a = 1 \\ a = -2 \end{cases}$

$f(1) \rightarrow (1) 2 + 1 = 2(1) + 1 = 3$

$f(x) = \begin{cases} 2x^2 - b & x \geq 1 \text{ و } x \leq -2 \\ a + 2x & -2 \leq x \leq -1 \end{cases}$

$2(-2)^2 - b = a - 2 \Rightarrow a + b = 11 \Rightarrow 4 = 2b$

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$$a) y = \frac{1}{x^2 - 4x^2} = \frac{1}{x^2(x-4)} \Rightarrow x^2(x-4) \neq 0 \Rightarrow x \neq 0, x \neq 4$$

$$\Rightarrow D_f = \mathbb{R} \setminus \{0, 4\}$$

$$b) y = \frac{1}{(x^2 - 4x^2)(x+4)} \Rightarrow (x^2 - 4x^2)(x+4) \neq 0 \Rightarrow (x^2(x-4))(x+4) \neq 0$$

$$\Rightarrow \underbrace{(x+4)}_{x \neq -4} \underbrace{(x^2(x-4))}_{x \neq 0, x \neq 4} \neq 0 \Rightarrow x \neq -4 \Rightarrow D_f = \mathbb{R} \setminus \{-4, 0, 4\}$$

$$c) y = \sqrt{x+1} - \sqrt{x-1} \rightarrow x-1 \geq 0 \Rightarrow x \geq 1$$

$$\rightarrow \frac{-1}{0} \frac{0}{0} \rightarrow x \in (-\infty, -1] \cup [1, \infty) \quad \bigcap \quad x \in [1, \infty)$$

$$d) y = \frac{\sqrt{4-x}}{\sqrt{4x-c}} \rightarrow \begin{cases} 4-x \geq 0 \Rightarrow x \leq 4 \\ 4x-c > 0 \Rightarrow x > \frac{c}{4} \end{cases} \rightarrow x \in (\frac{c}{4}, 4]$$

$$\Rightarrow b=4, a=1 \rightarrow \frac{b}{a} = \frac{4}{1} = 4$$

$$e) y = \frac{x^2 - x - 4}{x^2 - 13x^2 + 44} \rightarrow x^2 - x - 4 = (x-4)(x+1) \rightarrow x \leq 4, x \neq -1$$

$$x^2 - 13x^2 + 44 = (x-4)(x-11) \rightarrow x \neq 4, x \neq 11 \Rightarrow x \leq 4, x \neq -1$$

$$\Rightarrow \frac{-4 \quad -1 \quad 4 \quad 11}{0 \quad 0 \quad 0 \quad 0} \Rightarrow D_f = (-\infty, -4) \cup (-1, 4) \cup (11, \infty)$$

$$f) y = \frac{x^2 - 2x^2 - 2x + 4}{x^2 + 2x^2 - 2x - 4} \rightarrow (x-1)(x^2 - x - 4) \Rightarrow x \neq 1, x \neq -2, x \neq 4$$

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

$$\Rightarrow \frac{-4 \quad -1 \quad -1 \quad 1 \quad 2 \quad 4}{0 \quad 0 \quad 0 \quad 0 \quad 0 \quad 0} \Rightarrow D_f = (-\infty, -4) \cup (-2, -1) \cup (1, 2) \cup (4, \infty)$$

$$a) y = \sqrt{2[x] - 4} \Rightarrow 2[x] - 4 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow D_f = \boxed{x \geq 2}$$

$$b) y = \sqrt{2[x] - 4} \Rightarrow 2[x] - 4 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow D_f = \boxed{x \geq 2}$$

$$c) y = \sqrt{\frac{x+1}{|x-1|}} + \sqrt{\frac{4-x}{x^2+2x+5}}$$

مخرج صفر از مخرج
صورت نیز باید مثبت باشد

مخرج صفر از مخرج
صورت نیز باید مثبت باشد

$$\downarrow$$

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

بجای صفر مخرج که عدد

$$\downarrow$$

$$\frac{4}{2 \ 0 \ -}$$

$$x \in (-\infty, 4] \cap [-1, 4] - \{1\}$$

$$\hookrightarrow x \in [-1, 4] - \{1\}$$

$$d) y = \sqrt{[x] - 4} + \sqrt{2 - [x]} \Rightarrow [x] - 4 \geq 0 \Rightarrow [x] \geq 4 \Rightarrow x \geq 4$$

$$\Rightarrow 2 - [x] \geq 0 \Rightarrow [x] \leq 2 \Rightarrow x < 3$$

$$\rightarrow \boxed{\{ \}}$$