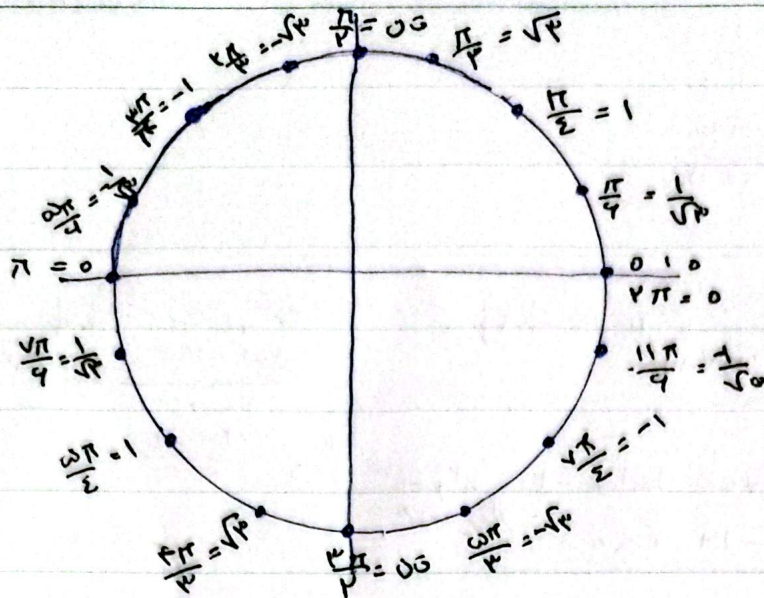


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$$\text{Q1) } \sin \frac{\pi}{4} + \cos \pi + \tan \frac{\pi}{2} = \frac{1}{\sqrt{2}} + (-1) + \infty = \frac{1}{\sqrt{2}} - 1 = -\frac{1}{\sqrt{2}} \quad (1)$$

$$\text{2) } -\cos \frac{\pi}{4} + \sin \frac{\pi}{4} - \tan \frac{\pi}{4} = -\left(-\frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{2}}{2}\right) - 1 = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - 1 = \frac{\sqrt{2}}{1} - 1 = \frac{\sqrt{2}-1}{1}$$

$$\text{3) } \cos \frac{\pi}{4} + \tan \frac{\pi}{4} - \sin \frac{\pi}{4} = \left(\frac{\sqrt{2}}{2}\right) + 1 - \left(\frac{\sqrt{2}}{2}\right) = 1$$

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

(10)

$$f(x) = \begin{cases} x^2 + \epsilon a & x \geq a \\ x^2 + a + \epsilon & x < a \end{cases}$$

$$x^2 + \epsilon a = x^2 + a + \epsilon$$

$$x^2 + a - \epsilon = 0 \quad (a-1)(a+\epsilon) = 0 \quad \begin{cases} a=1 \\ a=-\epsilon \end{cases}$$

$$f(1) = (1)^2 + \epsilon = a$$

(11)

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

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

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x+1

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$$D = \frac{1}{x^2 - \varepsilon x^2} \cdot \frac{1}{x^2 - \varepsilon x^2} - \{0, 1\}$$

$$x^2 - \varepsilon x^2 \neq 0 \quad x^2(x - \varepsilon) \neq 0 \quad \begin{cases} x \neq 0 \\ x \neq \varepsilon \end{cases}$$

$$y = \frac{1}{x^2 + \varepsilon x^2 + x^2 + \varepsilon} = \frac{1}{(x + \varepsilon)(x^2 + \varepsilon)} \quad D = \{R - \{x\}\}$$

$$\frac{x^2 + \varepsilon x^2 + x^2 + \varepsilon}{-x^2 - \varepsilon x^2} \mid \frac{x + \varepsilon}{x^2 + \varepsilon}$$

$$\frac{x^2 + \varepsilon}{-x^2 - \varepsilon}$$

$$\frac{0}{0}$$

$$x + \varepsilon \neq 0 \quad x \neq -\varepsilon \quad x^2 + \varepsilon \neq 0 \quad x^2 \neq -\varepsilon \quad x^2 \neq -1$$

$$\Delta = b^2 - 4ac = 0 - 2 \times 1 \times 1 = -2 < 0$$

$$y = \sqrt{x^2 - 1} + \sqrt{x - 1} \quad x^2 - 1 \geq 0 \quad x \geq 1 \quad x \leq -1 \quad D = [1, +\infty)$$

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

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

$$4x - 1 \geq 0 \quad 4x \geq 1 \quad x \geq \frac{1}{4} \quad D = \left[\frac{1}{4}, +\infty\right)$$

$$4x - 1 > 0 \quad 4x > 1 \quad x > \frac{1}{4}$$

$$y = \sqrt{4x - a} \geq 0 + \sqrt{b - 4x} \geq 0 \quad 4x - a = 0 \quad x = \frac{a}{4} \quad a = 12$$

$$D = \{x\}$$

$$b - 4x = 0 \quad x = \frac{b}{4} \quad b = 4x \quad \frac{b}{4} = \frac{1}{4}$$

$$y = \sqrt{\frac{x^2 - x - 4}{x^2 - (x^2 + x^2 - 4)}} \geq 0$$

$$\frac{(x + 1)(x - 3)}{(x^2 - 1)(x^2 - 4)} \geq 0$$

$$\frac{(x + 1)(x - 3)}{(x - 1)(x + 1)(x - 2)(x + 2)} \geq 0$$

$$\frac{x}{+} \mid \frac{-}{-} \frac{-}{-} \frac{+}{+} \frac{+}{+}$$

$$D = (-\infty, -1) \cup (1, +\infty) - \{3\}$$

$$\sqrt{\frac{x^2 - 2x^2 - 3x + 4}{x^2 + 2x^2 - 3x - 4}} \geq 0$$

$$\frac{(x - 1)(x + 2)(x - 3)}{(x + 1)(x + 2)(x - 3)} \geq 0$$

$$\frac{x}{+} \mid \frac{-}{-} \frac{-}{-} \frac{+}{+} \frac{+}{+}$$

$$\frac{x^2 - 2x^2 - 3x + 4}{-x^2 + x^2}$$

$$\frac{x^2 + 2x^2 - 3x - 4}{-x^2 + x^2}$$

$$\frac{-x^2 - 3x + 4}{+x^2 + x}$$

$$\frac{2x^2 - 3x - 4}{-x^2 - x}$$

$$\frac{-3x + 4}{+2x + 3}$$

$$\frac{-4x - 4}{+4x + 3}$$

$$\frac{+2x + 3}{0}$$

$$\frac{+4x + 3}{0}$$

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

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

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$$4[x] - \varepsilon \geq 0 \quad 4[x] \geq \varepsilon \quad [x] \geq \frac{\varepsilon}{4} \quad x \geq \frac{\varepsilon}{4} \quad Df = [\frac{\varepsilon}{4}, +\infty)$$

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

$$4[x] - \omega \geq 0 \quad 4[x] \geq \omega \quad [x] \geq \frac{\omega}{4} \quad x \geq \frac{\omega}{4} \quad Df = [\frac{\omega}{4}, +\infty)$$

$$c) y = \sqrt{\frac{x+1}{1x-4}} + \sqrt{\frac{4-x}{2x+5}} \geq 0 \quad \begin{array}{c} 2 \quad -1 \quad 4 \\ 0 \quad -4 \quad 5 \end{array} \quad [-1, +\infty) - \{4\} \quad 1 \cap 2$$

$$\Delta = b^2 - 4ac \quad \frac{4-x}{x^2+2x+5} \geq 0 \quad \frac{4-x}{x^2+2x+5} \geq 0 \quad \begin{array}{c} 4 \quad -1 \\ 0 \quad 1 \quad 5 \end{array} \quad (-\infty, 4] \quad \Delta < 0 \quad 2, 1 \text{ is } (-\infty)$$

$$Df = [-1, 4] - \{4\}$$

$$b) \sqrt{[x] - \varepsilon} + \sqrt{4 - [x]} \quad 1 \cap 2 = \emptyset$$

$$[x] - \varepsilon \geq 0 \quad 4 - [x] \geq 0 \quad Df = \emptyset \quad \bar{\emptyset}$$

$$[x] \geq \varepsilon \quad 4 \geq [x] \quad x < 4 \quad (-\infty, 4)$$

$$x \geq \varepsilon \quad [\varepsilon, +\infty)$$

مايا سعد