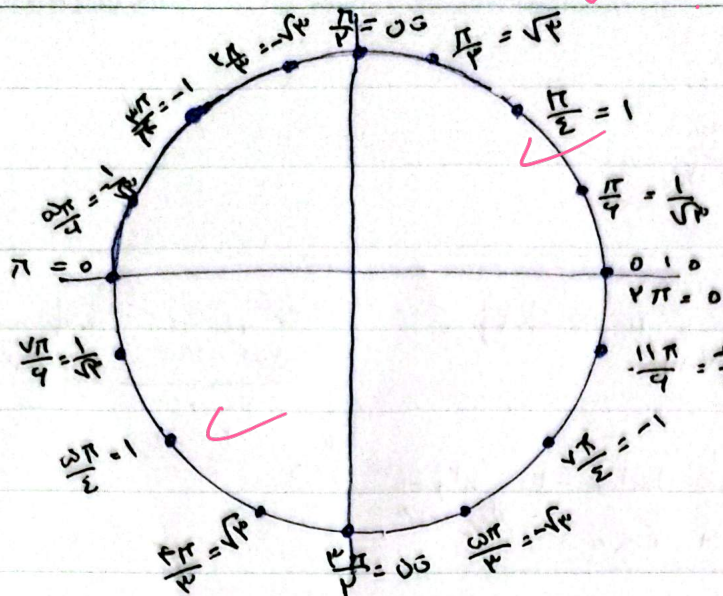


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٢. آفرین خوب نوشته

ماتریس معر



$$\text{a)} \sin \frac{\pi}{4} + \cos \pi + 2 \tan \frac{\pi}{2} = \frac{1}{\sqrt{2}} + (-1) + 2(-1) = \frac{1}{\sqrt{2}} - 3 = -\frac{5}{\sqrt{2}} \quad (2)$$

$$\text{b)} -\cos \frac{5\pi}{4} + \sin \frac{7\pi}{4} - 3 \sin \frac{\pi}{4} = -(-\frac{\sqrt{2}}{2}) + (\frac{\sqrt{2}}{2}) - 3(\frac{\sqrt{2}}{2}) = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - \frac{3\sqrt{2}}{2} = -\frac{\sqrt{2}}{2}$$

$$\text{c)} \cos \frac{7\pi}{4} + 2 \cos \frac{5\pi}{4} - 2 \tan \frac{\pi}{4} = (-\frac{\sqrt{2}}{2}) + 2(-\frac{\sqrt{2}}{2}) + 2(-1) = -\frac{\sqrt{2}}{2} - \sqrt{2} - 2 = -\frac{3\sqrt{2}}{2} - 2$$

$$\text{d)} \cos(5\pi/9) + \sin(\pi/9) = \cos(90^\circ) + \sin(90^\circ) = 1 + 1 = 2$$

(10)

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

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

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

$$f(1) = (1)^2 + \varepsilon = 1 + \varepsilon$$

(11)

$$f(n) = \begin{cases} 2n^2 - 1 & n+1 \geq 2 \\ a + 4n & -2 \leq n \leq -1 \end{cases} \quad \begin{aligned} 2(-2)^2 - 1 &= a + 2(-2) \\ 1 - 1 &= a - 4 \end{aligned} \quad a + b = 2\varepsilon$$

$$n+1 \geq 2 \quad n+1 > 2 \quad n \geq -1 \quad 2(n+1) \leq -2 \quad n \leq -3$$

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n+1

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المسألة

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

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

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

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

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

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

$$\Delta = b^2 - 4ac = 0 - 2 \times 1 \times 1 = -14 \quad \Delta < 0$$

$$f(x) = \sqrt{x^2 - 1} + \sqrt{x - 1} \quad x^2 - 1 \geq 0, x - 1 \geq 0 \quad x \geq 1 \quad x \geq -1 \quad D_f = [1, +\infty)$$

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

$$f(x) = \frac{\sqrt{4x - 1}}{\sqrt{4x - 1}}$$

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

$$D_f = \left[\frac{1}{4}, +\infty\right)$$

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

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

$$D_f = \{1, 2\}$$

$$b - 4x = 0 \quad x = \frac{b}{4} \quad b = 4x \quad \frac{b}{a} = \frac{1}{2}$$

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

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

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

$$\begin{array}{c|cccc} & -1 & -\frac{1}{2} & 1 & 2 \\ \hline \delta & + & - & - & + \end{array}$$

$$D_f = (-\infty, -1) \cup (1, +\infty) - \{2\}$$

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

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

$$\begin{array}{c|ccccccc} & -1 & -\frac{1}{2} & -1 & 1 & 2 & 3 \\ \hline \delta & + & - & - & - & + & + \end{array}$$

$$\frac{x^2 - 2x^2 - 2x + 4}{-x^2 + x^2} + \frac{x - 1}{x^2 - x - 2}$$

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

$$\frac{x^2 + 2x^2 - 2x - 4}{-x^2 + x^2} + \frac{x + 1}{x^2 + x - 4}$$

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

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

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

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

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

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

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

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

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

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

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

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

$$[x] \geq \varepsilon$$

$$4 \geq [x]$$

$$x \geq \varepsilon$$

$$x < 4$$

$$[\varepsilon, +\infty)$$

$$(-\infty, 4)$$

مايا سعد