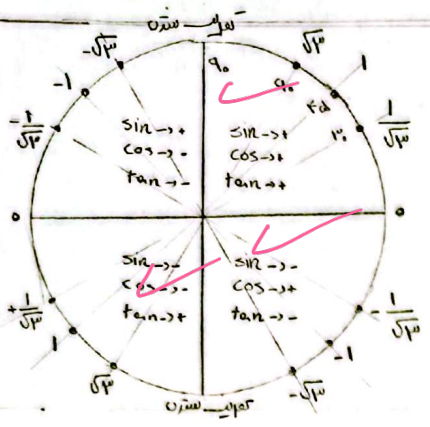


۲۰. اثبات این ضرب نوکتر

۱-۲. A. صفحه ۲۰۰



$\tan = \frac{\sin}{\cos}$

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الف $\sin \frac{\pi}{6} = \frac{1}{2}$ $\cos \pi = -1$ $\tan \frac{\pi}{6} = \frac{1}{\sqrt{3}}$ $\rightarrow \frac{1}{2} \cdot \frac{1}{\sqrt{3}} = \frac{1}{2\sqrt{3}}$

ب $1 - \cos \frac{\pi}{3} = 1 - \frac{1}{2} = \frac{1}{2}$ $\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$ $\rightarrow \frac{1}{2} \cdot \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4}$

ج $\cot \frac{\pi}{6} = \sqrt{3}$ $\cot \frac{\pi}{3} = \frac{1}{\sqrt{3}}$ $\rightarrow \sqrt{3} \cdot \frac{1}{\sqrt{3}} = 1$

د $\cos(\frac{\pi}{2} - \alpha) = \sin \alpha$

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

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

$f(1) = 0$

$\frac{1}{2} x = -2 \rightarrow x = -4$

$11 - b = a - 4 \rightarrow 11 + 4 = a + b \rightarrow a + b = 15$

الف $y = \frac{1}{x^3 - 4x^2}$

$x^3 - 4x^2 \neq 0 \rightarrow x^2(x - 4) \neq 0 \rightarrow x \neq 0, x \neq 4$

$D_f = \mathbb{R} - \{0, 4\}$

ب $y = \frac{1}{x^3 - 4x^2} = \frac{1}{x^2(x - 4)}$

$D_f = \mathbb{R} - \{0, 4\}$

دستبندی پایانه ای

Home work

1.

$$x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \quad x \geq 1 \quad x - 1 \geq 0 \quad x \geq 1 \quad \cap \Rightarrow x \geq 1 \quad D_f = [1, +\infty)$$

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2.

$$4 - 3x \geq 0 \rightarrow 4 \geq 3x \rightarrow x \leq \frac{4}{3} \quad \sqrt{4x - 3} \neq 0 \rightarrow 4x - 3 \neq 0 \quad 4x \neq 3 \quad x \neq \frac{3}{4}$$

$$4x - 3 \geq 0 \rightarrow 4x \geq 3 \rightarrow x \geq \frac{3}{4} \Rightarrow \frac{3}{4} \leq x \leq \frac{4}{3} \Rightarrow D_f = [\frac{3}{4}, \frac{4}{3}]$$

3.

$$11 - a = 0 \quad a = 11 \quad b - 4 = 0 \quad b = 4 \quad \frac{b}{a} = \frac{1}{11}$$

$$L: x = \frac{a}{4} \quad L: x = \frac{b}{4}$$

$$\rightarrow I: b \geq 0 \rightarrow -a + 4x \geq 0 \quad 4x \geq a \Rightarrow x \geq \frac{a}{4}$$

$$\rightarrow II: b \geq 0 \rightarrow b - 3x \geq 0 \quad \frac{b}{3} \geq x$$

$$\Rightarrow \frac{1}{3} \leq x \leq \frac{a}{4} \quad \frac{b}{a} = \frac{1}{11}$$

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$$1) \quad \frac{(x-3)(x+2)}{(x^2-4)(x^2-9)} = \frac{1}{(x-1)(x^2-4)} \Rightarrow D_f = (-\infty, -3) \cup (2, +\infty)$$

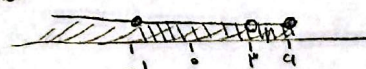
$$D_f = (-\infty, -3) \cup (2, 4) \cup (4, +\infty)$$

$$2) \quad \frac{x^3 - 4x^2 - 4x + 4}{-x^3 + x^2} = \frac{x^2(x-4) - 4(x-1)}{x^2(x-1)} \Rightarrow D_f = \{x \mid x \neq 0, x \neq 1\}$$

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

$$III: \frac{4 - x}{x^2 + x + 1} \geq 0 \rightarrow 4 - x \geq 0 \rightarrow x \leq 4$$

$$D_f = (-\infty, 4] \cup [1, 1) \cup [1, 1) \cup [1, 1)$$



$$I: \frac{x+1}{|x-3|} \geq 0 \rightarrow x+1 \geq 0 \rightarrow x \geq -1$$

$$\Rightarrow D_f = [-1, 4] - \{3\}$$

$$1) \quad [x] - 4 \geq 0 \quad [x] \geq 4 \quad [4, +\infty)$$

$$2 - [x] \geq 0 \quad [x] \leq 2 \quad (-\infty, 2]$$

$\emptyset$

4.

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

5.

$$x[x] - 1 \geq 0 \quad [x] \geq \frac{1}{x} \quad [1, +\infty)$$

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