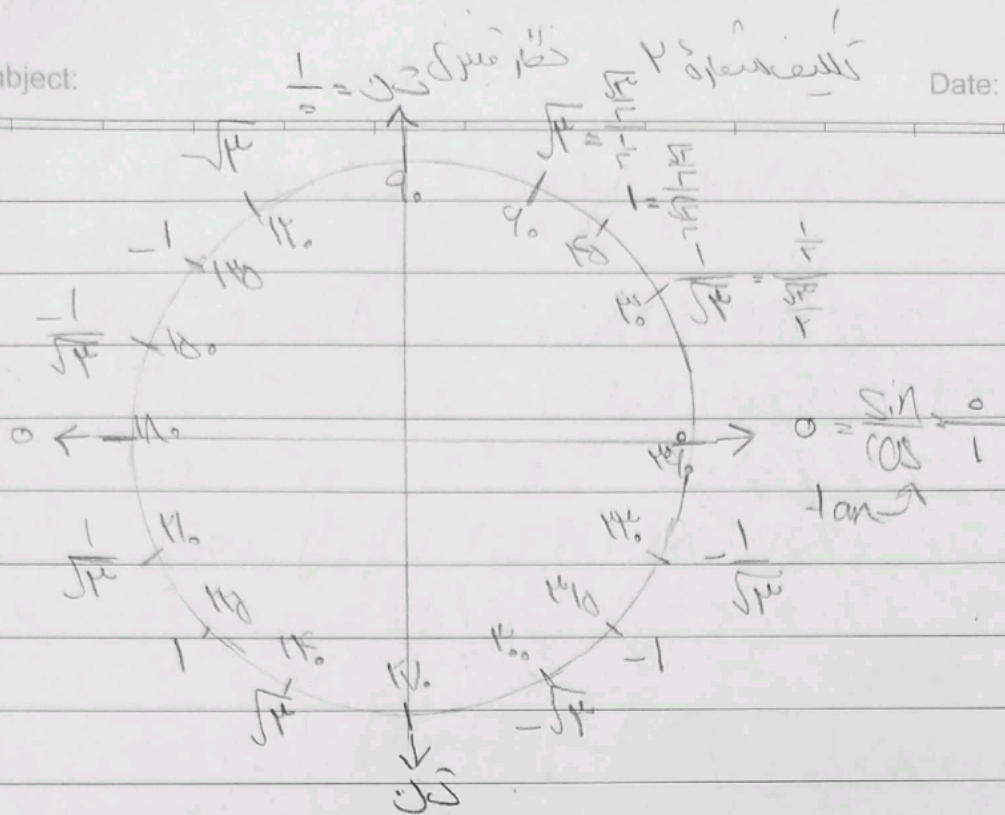


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$$d) \sin \frac{\pi}{4} + \cos \pi + \tan \frac{3\pi}{4} = \frac{1}{\sqrt{2}} - 1 - 1 = -\frac{1}{\sqrt{2}}$$

$$e) -\cos \frac{5\pi}{4} + \sin \frac{\pi}{4} + \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} = \frac{3\sqrt{2}}{2}$$

$$f) \cot \frac{\pi}{4} + \cot \frac{\pi}{4} - \tan \frac{5\pi}{4} = \frac{-1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

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

$$f(x) = \begin{cases} x^2 + 5x & x \geq 1 \\ 5x + 4 & x < 1 \end{cases}$$

$$\begin{aligned} \frac{d}{dx} f(x) &= \begin{cases} 2x + 5 & x \geq 1 \\ 5 & x < 1 \end{cases} \\ f(1) &= 1 + 5 = 6 \end{aligned}$$

$$a \neq 1 \Rightarrow a > 0$$

$$f(x) = \begin{cases} 5x^2 & |x+1| \geq 1 \\ 4+5x & -1 < x < 1 \end{cases}$$

$$\begin{aligned} |x+1| \geq 1 & \Rightarrow x+1 \geq 1 \vee x+1 \leq -1 \\ & \Rightarrow x \geq 0 \vee x \leq -2 \end{aligned}$$

$$\begin{aligned} \frac{d}{dx} f(x) &= \begin{cases} 10x & x \geq 0 \vee x \leq -2 \\ 5 & -1 < x < 1 \end{cases} \\ f(-1) &= 4 - 5 = -1 \end{aligned}$$

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$$الف) y = \frac{1}{x^5 - 5x^4 + 4x^3} \neq 0 \quad x^5(x-4) \neq 0 \quad x \neq 0, 4 \quad D_f = \mathbb{R} - \{0, 4\} \quad (3)$$

$$ب) y = \frac{1}{x^5 + 5x^4 + 4x^3} \neq 0 \quad x^5(x+4) \neq 0 \quad D_g = \mathbb{R} - \{-4\} \quad (4)$$

$$الف) y = \sqrt{x-1} \geq \sqrt{x-5} \geq 0 \quad (x \geq 1 \vee x \leq -1) \wedge x \geq 5 \quad D_f = [5, +\infty)$$

$$ب) y = \sqrt{4-x} \geq 0 \rightarrow x \leq 4$$

$$\sqrt{4x-3} \geq 0 \rightarrow x \geq \frac{1}{4} \quad \cap \Rightarrow D_g = \left(\frac{1}{4}, 4\right]$$

$$y = \sqrt{4x-3} \geq \sqrt{6-4x} \geq 0 \quad D_f = \{x\}$$

$$x \geq \frac{a}{4} \quad x \leq \frac{b}{4} \quad D_f = \left[\frac{a}{4}, \frac{b}{4}\right] = \{x\} \quad \frac{a}{4} = \frac{b}{4} = 1$$

$$a=1 \quad b=4$$

$$\left| \frac{b}{a} = \frac{4}{1} = 4 \right|$$

$$الف) y = \frac{x^5 - x^4 - 4}{x^5 - 13x^4 + 12x^3} = \frac{(x-4)(x+1)}{(x-1)(x-4)(x-3)(x+1)} = \frac{1}{(x-1)(x-3)}$$

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

$$ب) y = \frac{x^5 - 4x^4 - 8x^3 + 9}{x^5 + 5x^4 - 8x^3 - 4} = \frac{x^4(x-4) - 8x^3 + 9}{x^4(x+5) - 8x^3 - 4}$$

$$\frac{x^4(x-4) - 8x^3 + 9}{x^4(x+5) - 8x^3 - 4} = \frac{x^4(x-4) - 8x^3 + 9}{x^4(x+5) - 8x^3 - 4}$$

$$\frac{x^4(x-4) - 8x^3 + 9}{x^4(x+5) - 8x^3 - 4} = \frac{x^4(x-4) - 8x^3 + 9}{x^4(x+5) - 8x^3 - 4}$$

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$$\int_{-\infty}^{\infty} \frac{(x-x)(x-x)}{(x-x)(x-x)} dx$$

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

المعادلة

$$Dg = (-\infty, -x) \cup (-x, x) \cup (x, +\infty)$$

الف) $y = x, x[x] - x \geq 0, [x] \geq x, x \geq x, Df = [x, +\infty)$ (9)

ب) $y = x, x[x] - x \geq 0, [x] \geq \frac{x}{x} \geq \frac{1}{x}, x \geq x, Dg = [x, +\infty)$

الف) $y = \frac{x}{x}, x[x] \geq 0, \frac{x}{x} \geq 0, Df = [-1, 4] - \{x\}$ (10)

$$\frac{-1 \quad x}{-x+x} + \frac{-x \quad x}{-x+x} \cap x \leq 4$$

ب) $y = [x] - x \geq 0, x - [x] \geq 0, Dg = \emptyset$

$$\begin{aligned} [x] \geq x & \quad [x] \leq x \\ x \geq x & \quad \cap \quad x \leq x \end{aligned}$$

