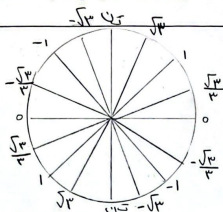


نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۷ کلاس دانش آموز
 نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۷ کلاس دانش آموز



۱

۱) $\sin \frac{\pi}{4} + \cos \pi + 2 \tan \frac{3\pi}{4} \rightarrow \sin 45^\circ + \cos 180^\circ + 2 \tan 135^\circ = \frac{1}{\sqrt{2}} - 1 + 2 \times (-1) = -\frac{3}{\sqrt{2}}$

۲) $-\cos \frac{5\pi}{4} + \sin \frac{2\pi}{3} - 3 \sin \frac{\pi}{3} \rightarrow -\cos 150^\circ + \sin 120^\circ - 3 \sin 60^\circ = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} - 3 \times \frac{\sqrt{3}}{2} = -\frac{\sqrt{3}}{2}$

۳) $\cot \frac{3\pi}{4} + 2 \cot \frac{\pi}{3} - 2 \tan \frac{\pi}{4} \rightarrow \cot 135^\circ + 2 \cot 60^\circ - 2 \tan 45^\circ = -\frac{1}{\sqrt{2}} + \frac{2}{\sqrt{3}} + 2 \times \frac{\sqrt{3}}{3} = \frac{2\sqrt{3}}{3}$

۴) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) = \cos 0^\circ + \sin(\frac{\pi}{\sqrt{2}}) = 1 + 1 = 2$

۲

$f(x) = \begin{cases} x^2 + 2x & x > 1 \\ 2x + a + 2 & x \leq 1 \end{cases}$

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

$\begin{cases} 1 & a = 1 - 2 \\ 2 & a > 0 \rightarrow a = 1 \end{cases}$

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

۳

$f(x) = \begin{cases} x^2 - b & x+1 > 2 \\ x^2 - b & x+1 \leq 2 \\ a + 2x & -3 \leq x \leq -1 \end{cases}$

$f(x) = \begin{cases} x^2 - b & x > 1 \\ x^2 - b & x \leq -3 \\ a + 2x & -3 \leq x \leq -1 \end{cases}$

$a + 2x = x^2 - b \xrightarrow{x=-3} a - 4 = 9 - b \rightarrow a + b = 13$

۴

۱) $\frac{1}{x^3 - 2x^2} \quad x^3 - 2x^2 \neq 0 \rightarrow x^2(x-2) \neq 0 \quad x \neq \{0, 2\}$

$D = \mathbb{R} - \{0, 2\}$

۲) $\frac{1}{x^2 + 2x^2 + 2x + 2} = \frac{1}{x^2(x+2) + 2(x+1)} \rightarrow x+2 \neq 0 \rightarrow x \neq -2$

$D = \mathbb{R} - \{-2\}$

$$y = \sqrt{x^2 - 1} + \sqrt{x - 2} \rightarrow \begin{cases} x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1 \\ x - 2 \geq 0 \rightarrow x \geq 2 \end{cases} \leftarrow \begin{matrix} \text{من } x \in [-1, +\infty) \\ \text{من } x \in [2, +\infty) \end{matrix}$$

$$\Rightarrow y = \frac{\sqrt{4 - 3x}}{\sqrt{4x - 3}} \quad \begin{cases} 4 - 3x \geq 0 \rightarrow 3x \leq 4 \rightarrow x \leq \frac{4}{3} \\ 4x - 3 \geq 0 \rightarrow 4x \geq 3 \rightarrow x \geq \frac{3}{4} \end{cases} \leftarrow \begin{matrix} \text{من } x \in (\frac{3}{4}, \frac{4}{3}] \\ \text{من } x \in [\frac{3}{4}, \frac{4}{3}] \end{matrix}$$

$$y = \sqrt{4x - a} + \sqrt{b - 3x} \quad \begin{cases} 4x - a = 0 \rightarrow x = \frac{a}{4} \rightarrow x \geq \frac{a}{4} \\ b - 3x = 0 \rightarrow x = \frac{b}{3} \rightarrow x \leq \frac{b}{3} \end{cases}$$

$$\frac{a}{4} = 2 \rightarrow a = 8 \quad \frac{b}{3} = 2 \rightarrow b = 6 \quad \left\} \frac{b}{a} = \frac{1}{2} \right. \quad D = \left[\frac{a}{4}, \frac{b}{3} \right] = \{2\}$$

$$y = \frac{x^2 - 13x^2 + 14}{x^2 - 13x^2 + 14} \rightarrow \begin{cases} \text{من } x^2 - 13x^2 + 14 \geq 0 \rightarrow (x^2 - 4)(x^2 - 9) \rightarrow x = \pm 2, \pm 3 \\ \text{من } x^2 - 13x^2 + 14 \geq 0 \rightarrow (x - 2)(x + 2) \rightarrow x = 2, -2 \end{cases}$$

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

$$y = \frac{x^2 - 13x^2 - 5x + 4}{x^2 + 2x^2 - 5x - 4} \rightarrow \begin{cases} \text{من } (x - 1)(x - 3)(x + 2) \\ \text{من } (x - 2)(x + 1)(x + 3) \end{cases}$$

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

$$y = \sqrt{2[x] - 8} \quad 2[x] - 8 \geq 0 \rightarrow 2[x] \geq 8 \rightarrow [x] \geq 4 \quad D = [4, +\infty)$$

$$y = \sqrt{2[x] - 4} \quad 2[x] - 4 \geq 0 \rightarrow 2[x] \geq 4 \rightarrow [x] \geq 2 \quad D = [2, +\infty)$$

$$y = \sqrt{\frac{x+1}{1-x^2}} + \sqrt{\frac{4-x}{x^2+2x+8}} \rightarrow \begin{cases} 4-x \geq 0 \rightarrow x \leq 4 \\ \frac{x+1}{1-x^2} \geq 0 \rightarrow \frac{(x+1)(x-1)}{(1-x)(1+x)} \geq 0 \rightarrow \frac{x-1}{1-x} \geq 0 \rightarrow x \leq 1 \end{cases}$$

$$\Delta = 8 - 14 = -6 < 0$$

$$\begin{cases} [x] - 8 \geq 0 \rightarrow [x] \geq 8 \quad [8, +\infty) \\ 2 - [x] \geq 0 \rightarrow [x] \leq 2 \quad (-\infty, 2] \end{cases} \rightarrow D = \emptyset$$