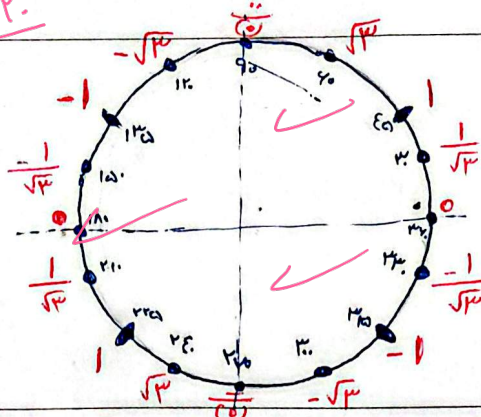


نام و نام خانوادگی امیرمحمد پاسخنامه تشریحی تکلیف شماره ۲ کلاس یازدهم B

۲۰. از این عای نوشتن!



الف) $\sin \frac{\pi}{6} + \cos \pi + 2 \tan \frac{\pi}{3} = \frac{1}{2} + (-1) + 2(-1) = \frac{1}{2} - 1 - 2 = -\frac{3}{2}$

ب) $-\cos \frac{5\pi}{6} + \sin \frac{2\pi}{3} - 3 \sin \frac{4\pi}{3} = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} + \frac{3\sqrt{3}}{2} = \frac{5\sqrt{3}}{2}$

ج) $\cot \frac{\pi}{6} + 2 \cot \frac{\pi}{3} - 2 \tan \frac{5\pi}{6} = \frac{1}{\frac{1}{\sqrt{3}}} + \frac{2}{\frac{1}{\sqrt{3}}} + \frac{2}{\frac{1}{\sqrt{3}}} = \frac{6}{\sqrt{3}} = 2\sqrt{3}$

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{6}) = \sin \pi = 0 \rightarrow \cos 0 = 1$ و $\cos \frac{\pi}{6} = \frac{1}{2} \rightarrow \sin(\pi \cdot \frac{1}{2}) = \sin \frac{\pi}{2} = 1$
 $\rightarrow 1 + 1 = 2$ جواب

$f(x) = \begin{cases} x^2 + 4x & x \geq a \\ 2x + a + 2 & x < a \end{cases} \xrightarrow{x=a} a^2 + 4a = 2a + a + 2 \rightarrow a^2 + a - 2 = 0 \rightarrow (a+2)(a-1) = 0$
 $\rightarrow a = -2$ و $a = 1$ $\xrightarrow{\text{موجب}} a > 0 \rightarrow f(x) = \begin{cases} x^2 + 4 & x \geq 1 \\ 2x + 3 & x < 1 \end{cases} \rightarrow f(1) = (1)^2 + 4 = 1 + 4 = 5$
 جواب: ۵

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

$|x+1| \geq 2 \rightarrow x+1 \geq 2 \rightarrow x \geq 1$ و $x+1 \leq -2 \rightarrow x \leq -3$
 $x = -3 \rightarrow 18 - b = a - 6 \rightarrow a + b = 24$ جواب: ۲۴

الف) $y = \frac{1}{x^3 - 4x^2} \rightarrow x^3 - 4x^2 \neq 0 \rightarrow x^2(x-4) \neq 0 \rightarrow x \neq 0$ و $x \neq 4$
 $\rightarrow D = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{1}{2x^3 + 5x^2 + 2x + 5} \rightarrow 2x^3 + 5x^2 + 2x + 5 \neq 0 \rightarrow (2x^3 + 5x^2) + (2x + 5) \neq 0$
 $\rightarrow 2x^2(x+2) + 2(x+2) \neq 0 \rightarrow 2(x+2)(x^2+1) \neq 0 \rightarrow x+2 \neq 0 \rightarrow x \neq -2$
 $\rightarrow D = \mathbb{R} - \{-2\}$

الف) $y = \sqrt{x^2-1} + \sqrt{x-2} \rightarrow x^2-1 \geq 0 \rightarrow x \leq -1, x \geq 1$
 $\rightarrow x-2 \geq 0 \rightarrow x \geq 2 \Rightarrow D_f = [2, +\infty) \rightarrow$ جواب

ب) $\frac{\sqrt{4-3x}}{\sqrt{9x-2}} \rightarrow 4-3x \geq 0 \rightarrow 4 \geq 3x \rightarrow x \leq \frac{4}{3}$
 $\frac{\sqrt{9x-2}}{\sqrt{9x-2}} \rightarrow 9x-2 \geq 0 \rightarrow 9x \geq 2 \rightarrow x \geq \frac{2}{9} \Rightarrow D_f = (\frac{2}{9}, \frac{4}{3}] \rightarrow$ جواب

$y = \sqrt{ax-a} + \sqrt{b-3x}$ و $D_f = \{2\}$ $x=2 \rightarrow y = \sqrt{12-a} + \sqrt{b-6}$

$12-a=0 \rightarrow a=12$

$b-6=0 \rightarrow b=6 \rightarrow \frac{b}{a} = \frac{6}{12} = \frac{1}{2}$

الف) $y = \sqrt{\frac{x^2-x-6}{x^2-11x^2+34x-6}} \rightarrow \sqrt{\frac{(x-3)(x+2)}{(x-2)(x+1)(x+3)(x-3)}} \rightarrow \frac{-3 \quad -2 \quad 2 \quad 3}{+ \quad - \quad - \quad +} \rightarrow D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$

ب) $\sqrt{\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6}} \rightarrow (x-1)(x+2)(x-3) \rightarrow \frac{-3 \quad -2 \quad -1 \quad 1 \quad 2 \quad 3}{+ \quad - \quad - \quad - \quad + \quad +} \rightarrow \frac{-3 \quad -2 \quad -1 \quad 1 \quad 2 \quad 3}{+ \quad - \quad - \quad - \quad + \quad +} \rightarrow D_f = (-\infty, -3) \cup (-3, -1) \cup (1, 2) \cup (2, +\infty)$

الف) $y = \sqrt{2[x]-\varepsilon} \rightarrow 2[x]-\varepsilon \geq 0 \rightarrow 2[x] \geq \varepsilon \rightarrow [x] \geq \frac{\varepsilon}{2} \rightarrow D_f = [\frac{\varepsilon}{2}, +\infty)$

ب) $y = \sqrt{2[x]-a} \rightarrow 2[x]-a \geq 0 \rightarrow 2[x] \geq a \rightarrow [x] \geq \frac{a}{2} \rightarrow D_f = [\frac{a}{2}, +\infty)$

الف) $y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+2}}$ $\begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \text{ و } x \neq 3 \\ x^2+2x+2 \geq 0 \rightarrow x \leq 4 \text{ و } x \neq -2 \end{cases} \Rightarrow D_f = [-1, 3) \cup (3, 4]$

ب) $y = \sqrt{[x]-1} + \sqrt{1-[x]} \rightarrow \begin{cases} [x]-1 \geq 0 \rightarrow [x] \geq 1 \rightarrow D_1 = (1, +\infty) \\ 1-[x] \geq 0 \rightarrow [x] \leq 1 \rightarrow D_2 = (-\infty, 1) \end{cases} \Rightarrow D_f = \emptyset$