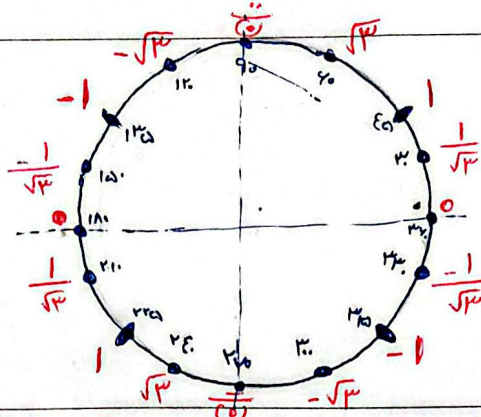


نام و نام خانوادگی امیرمحمد پاسخنامه تشریحی تکلیف شماره ۲ کلاس یازدهم B



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

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

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) $\cos(\sin x) + \sin(\pi \cos \frac{x}{\pi}) = \sin x = 0 \rightarrow \cos x = 1 \text{ و } \cos \frac{x}{\pi} = \frac{1}{\pi} \rightarrow \sin(x \frac{1}{\pi}) = \sin \frac{x}{\pi} = 1$
 $\rightarrow 1 + 1 = 2 \rightarrow \text{جواب}$

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

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

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

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

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

الف) $y = \sqrt{x^2-1} + \sqrt{x-2} \rightarrow \begin{cases} x^2-1 \geq 0 \rightarrow x \leq -1, x \geq 1 \\ x-2 \geq 0 \rightarrow x \geq 2 \end{cases} \xrightarrow{n} D_f = [2, +\infty) \rightarrow \text{جواب}$

ب) $\frac{\sqrt{4-3x}}{\sqrt{9x-2}} \rightarrow \begin{cases} 4-3x \geq 0 \rightarrow 4 \geq 3x \rightarrow x \leq \frac{4}{3} \\ 9x-2 \geq 0 \rightarrow 9x \geq 2 \rightarrow x \geq \frac{2}{9} \end{cases} \xrightarrow{n} D_f = \left[\frac{2}{9}, \frac{4}{3}\right] \rightarrow \text{جواب}$

$y = \sqrt{ax-a} + \sqrt{b-3x}$ 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) $y = \sqrt{\frac{x^2-x-6}{x^2-11x^2+34x-12}} \rightarrow \sqrt{\frac{(x-3)(x+2)}{(x-2)(x+1)(x+3)(x-3)}} \rightarrow \frac{-3 \quad -2 \quad 2 \quad 3}{+ \quad - \quad - \quad +} \rightarrow D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty) \rightarrow \text{جواب}$

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

الف) $y = \sqrt{2[x]-5} \rightarrow 2[x]-5 \geq 0 \rightarrow 2[x] \geq 5 \rightarrow [x] \geq \frac{5}{2} \rightarrow D_f = \left[\frac{5}{2}, +\infty\right) \rightarrow \text{جواب}$

ب) $y = \sqrt{2[x]-9} \rightarrow 2[x]-9 \geq 0 \rightarrow 2[x] \geq 9 \rightarrow [x] \geq \frac{9}{2} \rightarrow D_f = \left[\frac{9}{2}, +\infty\right) \rightarrow \text{جواب}$

الف) $y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+5}} \rightarrow \begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \text{ و } x \neq 3 \\ 4-x \geq 0 \rightarrow x \leq 4 \text{ و } x \neq -2 \end{cases} \xrightarrow{n} D_f = [-1, 3) \cup (3, 4] \rightarrow \text{جواب}$

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