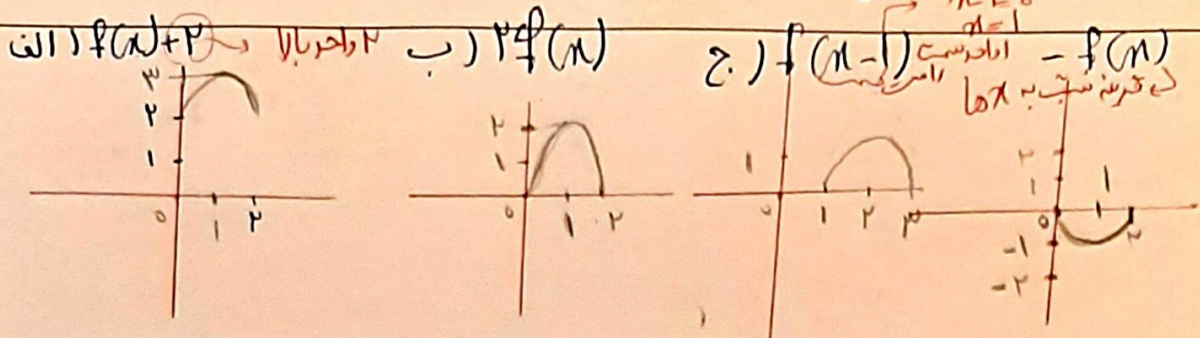


نام و نام خانوادگی: زهرا ایاذی پاسبان تشریحی تکلیف شماره ۱۱ کلاس: دهم دختره



الف) $x^2 - 4x + 6 > 0 \Rightarrow (x-2)(x-3) > 0$
 $\rightarrow x-2=0 \rightarrow x=2 \rightarrow x^2=0 \rightarrow x=0$
 $\rightarrow x-3=0 \rightarrow x=3 \rightarrow x^2=0 \rightarrow x=0$
 $\rightarrow x=0, 2, 3$
 $\rightarrow (-\infty, 0) \cup (2, 3) \cup (3, +\infty)$

ب) $x^2 - 6x + 4 < 0 \Rightarrow (x-1)(x-4) < 0$
 $\rightarrow x-1=0 \rightarrow x=1 \rightarrow x-4=0 \rightarrow x=4$
 $\rightarrow x=1, 4$
 $\rightarrow (1, 4)$

ج) $x^2 - 7x + 6 > 0 \Rightarrow (x-1)(x-6) > 0$
 $\rightarrow x-1=0 \rightarrow x=1 \rightarrow x-6=0 \rightarrow x=6$
 $\rightarrow x=1, 6$
 $\rightarrow (-\infty, 1) \cup (6, +\infty)$

د) $x^2 - 9x + 14 \leq 0 \Rightarrow (x-2)(x-7) \leq 0$
 $\rightarrow x-2=0 \rightarrow x=2 \rightarrow x-7=0 \rightarrow x=7$
 $\rightarrow x=2, 7$
 $\rightarrow [2, 7]$

الف) $x^2 - 5x + 6 < 0 \Rightarrow (x-2)(x-3) < 0$
 $\rightarrow x-2=0 \rightarrow x=2 \rightarrow x-3=0 \rightarrow x=3$
 $\rightarrow x=2, 3$
 $\rightarrow (2, 3)$

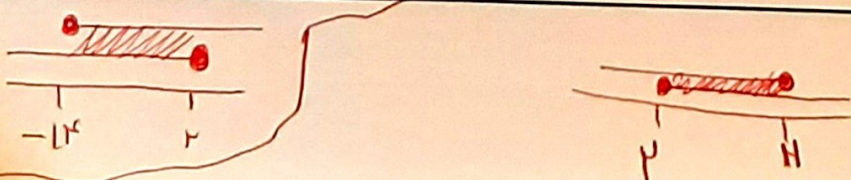
ب) $x^2 - 1 > 0 \Rightarrow (x-1)(x+1) > 0$
 $\rightarrow x-1=0 \rightarrow x=1 \rightarrow x+1=0 \rightarrow x=-1$
 $\rightarrow x=1, -1$
 $\rightarrow (-\infty, -1) \cup (1, +\infty)$

الف) $y = \sqrt{\frac{x^3-1}{x^3-x}} \geq 0$
 $\rightarrow \frac{x^3-1}{x^3-x} \geq 0$
 $\rightarrow \frac{(x-1)(x^2+x+1)}{(x-1)(x+1)} \geq 0$
 $\rightarrow \frac{x^2+x+1}{x+1} \geq 0$
 $\rightarrow x^2+x+1 \geq 0$
 $\rightarrow x^2+x+1 = 0$
 $\rightarrow x = \frac{-1 \pm \sqrt{1-4}}{2} = \frac{-1 \pm \sqrt{-3}}{2}$
 $\rightarrow x = -1$
 $\rightarrow (-\infty, -1) \cup (0, +\infty) - \{1\}$

ب) $y = \sqrt{\frac{x^2-4}{x^2-5x+6}} \geq 0$
 $\rightarrow \frac{x^2-4}{x^2-5x+6} \geq 0$
 $\rightarrow \frac{(x-2)(x+2)}{(x-2)(x-3)} \geq 0$
 $\rightarrow \frac{x+2}{x-3} \geq 0$
 $\rightarrow x+2 \geq 0 \rightarrow x \geq -2$
 $\rightarrow x-3 \geq 0 \rightarrow x \geq 3$
 $\rightarrow (-2, 3) \cup (3, +\infty)$

الف) $y = \sqrt{4-x} \geq 0$
 $\rightarrow 4-x \geq 0 \Rightarrow x \leq 4$
 $\rightarrow 4-x \geq 0 \Rightarrow \sqrt{4-x} \leq 2$
 $\rightarrow 4-x \leq 4 \Rightarrow x \geq 0$
 $\rightarrow x \in [0, 4]$

ب) $y = \sqrt{4-x} \geq 0$
 $\rightarrow 4-x \geq 0 \Rightarrow x \leq 4$
 $\rightarrow 4-x \geq 0 \Rightarrow \sqrt{4-x} \leq 2$
 $\rightarrow 4-x \leq 4 \Rightarrow x \geq 0$
 $\rightarrow x \in [0, 4]$

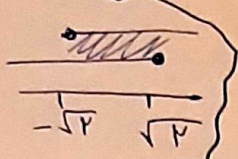


زهراسادات عمل آسانی

الف) $y = \sqrt{4-x^2} \geq 0$ (ب) $y = \sqrt{3|x|-9}$

$4-x^2 \geq 0$
 $x^2 \leq 4$
 $x^2 \leq 2$
 $-\sqrt{2} \leq x \leq \sqrt{2}$
 $D_f = [-\sqrt{2}, \sqrt{2}]$

$3|x|-9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3$
 $x \geq 3$
 $x \leq -3$
 $D_f = (-\infty, -3] \cup [3, +\infty)$




الف) $y = \frac{3}{\frac{|x|+1}{|x|-3}} \neq 0$ (ب) $y = \frac{3}{\sqrt{x+1} - \frac{3}{x}}$

$\frac{|x|+1}{|x|-3} \neq 0$
 $|x| \neq 3$
 $x \neq \pm 3$
 $D_f = \mathbb{R} - \{\pm 3\}$

$\sqrt{x+1} - \frac{3}{x} \neq 0$
 $\sqrt{x+1} \neq \frac{3}{x}$
 $x \neq 9$
 $x \geq 0$
 $D_f = [0, +\infty) - \{9\}$

نکته: مخرج صفر نشود
 مخرج نباید منفی باشد

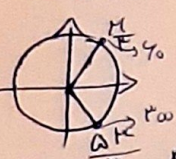
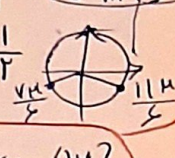
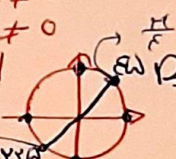
سوال 7: $D_f = [0, 9) \cup (9, +\infty)$

الف) $y = \frac{\sin x}{\cos x - 1} \neq 0$ (ب) $y = \frac{\cos x + 1}{\sin x + 1} \neq 0$

$\cos x \neq 1 \rightarrow x \neq 2k\pi$
 $D_f = \mathbb{R} - \{2k\pi, k \in \mathbb{Z}\}$

$\sin x \neq -1 \rightarrow x \neq -\frac{\pi}{2} + 2k\pi$
 $D_f = \mathbb{R} - \{-\frac{\pi}{2} + 2k\pi, k \in \mathbb{Z}\}$

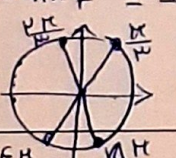
$y = \frac{\tan x + 2}{\cot x - 1} \neq 0 \rightarrow y = \frac{\sin x}{\cos x - 1} \neq 0$
 $\cos x \neq 1$
 $\sin x \neq 0$
 $\cot x \neq 1$
 $D_f = \mathbb{R} - \{\frac{k\pi}{2}, k \in \mathbb{Z}\}$

الف) $y = \frac{\sin x + 1}{\sin^2 x - \frac{1}{4}} \neq 0$ (ب) $y = \frac{1}{\sqrt{3|x-1| - \frac{1}{3}}} \geq 0$

$\sin^2 x \neq \frac{1}{4}$
 $\sin x \neq \pm \frac{1}{2}$
 $D_f = \mathbb{R} - \{\frac{k\pi}{6}, k \in \mathbb{Z}\}$

$3|x-1| - \frac{1}{3} \geq 0$
 $|x-1| \geq \frac{1}{9}$
 $x-1 \leq -\frac{1}{9}$ or $x-1 \geq \frac{1}{9}$
 $x \leq \frac{8}{9}$ or $x \geq \frac{10}{9}$
 $D_f = (-\infty, \frac{8}{9}] \cup [\frac{10}{9}, +\infty)$



الف) $y = \sqrt{(f-2|x|)} \geq 0$ (ب) $y = \frac{|x|}{|x|} \geq 0$

$f-2|x| \geq 0$
 $2|x| \leq f$
 $|x| \leq \frac{f}{2}$
 $-\frac{f}{2} \leq x \leq \frac{f}{2}$
 $D_f = [-\frac{f}{2}, \frac{f}{2}]$

$\frac{|x|}{|x|} \geq 0$
 $|x| \neq 0$
 $x \neq 0$
 $D_f = \mathbb{R} - \{0\}$

نکته: $\frac{|x|}{|x|} = 1$ for $x \neq 0$

