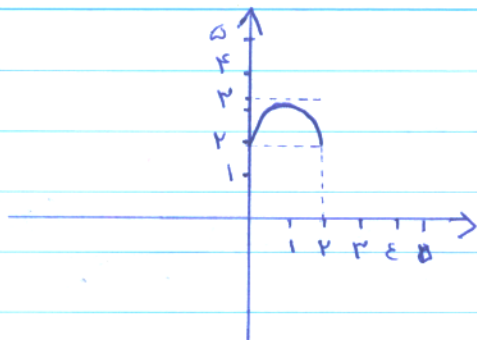
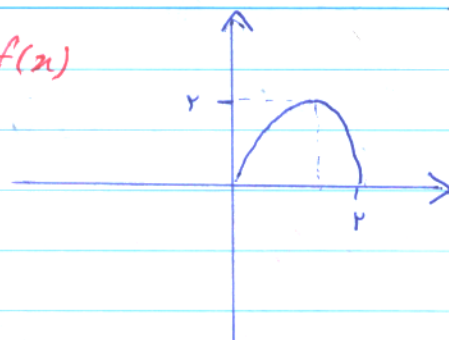


الف) $f(x) + 2$

۲ واحد به سمت بالا منتقل می شود

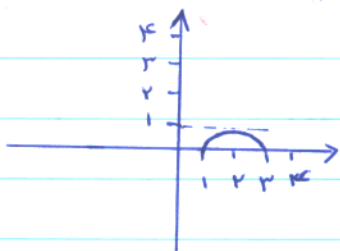


ب) $2f(x)$



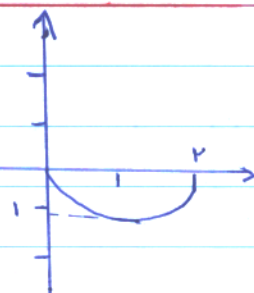
ج) $f(x-1)$

۱ واحد به سمت راست منتقل می شود



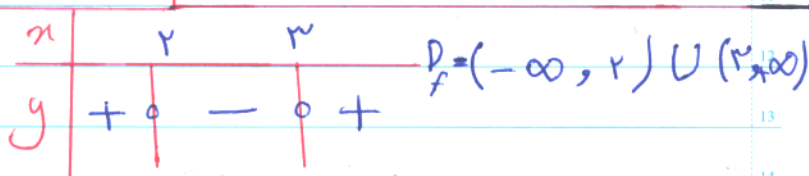
د) $-f(x)$

نسبت به محور x قرینه می شود



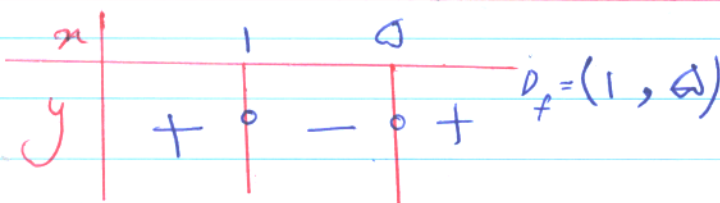
الف) $x^2 - 5x + 6 > 0$

$\rightarrow (x-2)(x-3) > 0$



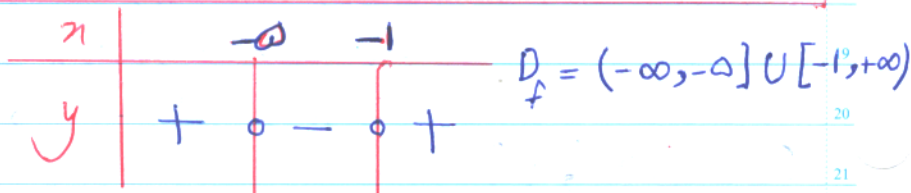
ب) $x^2 - 6x + 5 < 0$

$\rightarrow (x-1)(x-5) < 0$



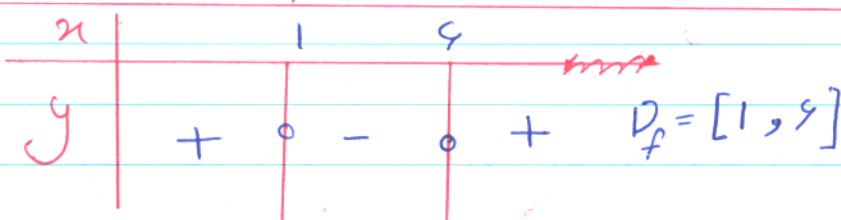
ج) $x^2 + 6x + 5 \geq 0$

$\rightarrow (x+5)(x+1) \geq 0$



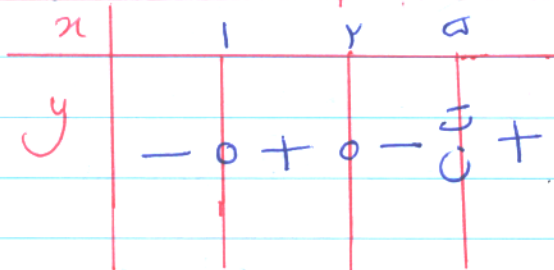
د) $x^2 - 7x + 6 \leq 0$

$\rightarrow (x-1)(x-6) \leq 0$



الف) $\frac{x^2 - 3x + 2}{x-5} < 0$

$\rightarrow \frac{(x-1)(x-2)}{(x-5)} < 0$



$D_f = (-\infty, 1) \cup (2, 5)$

$$ب) \frac{x^2-1}{x^2-2x+2} \geq 0$$

$$\rightarrow \frac{(x-1)(x+1)}{(x-1)(x-2)} \geq 0 \quad \text{مضاعف}$$

x	-1	1*	2
y	+	0	-

سؤال 3

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

$$الف) \sqrt{\frac{x^2-1}{x^2-2x}} \rightarrow \frac{x^2-1}{x^2-2x} \geq 0 \rightarrow \frac{(x-1)(x+1)}{x(x-2)} \geq 0$$

$$\frac{x^2+2x+1}{x(x+1)} \geq 0$$

x	-1	0	1*
y	+	0	-

$$D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$$

$$ب) \sqrt{\frac{x^2-16}{x^2-2x+4}} \rightarrow \frac{x^2-16}{x^2-2x+4} \geq 0 \rightarrow \frac{(x-4)(x+4)}{(x-1)(x-4)} \geq 0$$

x	-4	1	4*
y	+	0	-

$$D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$$

$$الف) \sqrt{4-\sqrt{2-x}} \rightarrow 2-x \geq 0 \rightarrow x \leq 2$$

$$\rightarrow 4-\sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow 2-x \leq 16$$

$$\rightarrow x \geq -14 \rightarrow -14 \leq x \leq 2$$

$$D_f = [-14, 2]$$

$$ب) \sqrt{2-\sqrt{x-2}} \rightarrow x-2 \geq 0 \rightarrow x \geq 2$$

$$\rightarrow 2-\sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 2 \rightarrow x-2 \leq 4 \rightarrow x \leq 6$$

$$\rightarrow 2 \leq x \leq 6 \quad D_f = [2, 6]$$

$$الف) \sqrt{4-2x^2} \rightarrow 4-2x^2 \geq 0 \rightarrow 2x^2 \leq 4 \rightarrow x^2 \leq 2$$

$$\rightarrow -\sqrt{2} \leq x \leq \sqrt{2} \quad D_f = [-\sqrt{2}, \sqrt{2}]$$

$$ب) \sqrt{3|x|-9} \rightarrow 3|x|-9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3$$

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

سؤال 4

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DATE / / SUBJECT: چون این سه سوم است کسری توان مثبت یا منفی باشد

الف) $\sqrt[3]{\frac{|x|+1}{|x|-3}}$ $\rightarrow |x|-3 \neq 0 \rightarrow |x| \neq 3 \rightarrow x \neq 3$
 $\rightarrow |x|+1 \rightarrow$ همیشه مثبت است زیرا که مطلق $\rightarrow$ همیشه عددی مثبت می دهه.

$$D_f \Rightarrow \mathbb{R} - \{-3, 3\}$$

ب) $\sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\rightarrow$ به دلیل داشتن $\sqrt{x}$ $\rightarrow x \geq 0$
 $\rightarrow \sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$

$$D_f \Rightarrow \mathbb{R}^+ - \{9\}$$

الف) $y = \frac{\sin x}{2\cos x - 1}$ فقط مخرج نباید صفر باشد. $\rightarrow 2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow x \neq 2k\pi \pm \frac{\pi}{3}$

$$D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3} : k \in \mathbb{Z}\}$$

ب) $y = \frac{\cos x + 1}{2\sin x + 1}$ فقط مخرج نباید صفر باشد. $\rightarrow 2\sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow x \neq 2k\pi + \frac{7\pi}{6}$
 $\rightarrow x \neq 2k\pi + \frac{11\pi}{6}$

$$D_f = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} : k \in \mathbb{Z}\}$$

2. $y = \frac{\tan x + 2}{\cot x - 1}$ اینجا هم توان مثبت و هم توان منفی باید تعریف شده باشد. $\rightarrow \tan x \cos x \neq 0$
 $\rightarrow \sin x \neq 0, \cos x \neq 0$
 $\rightarrow \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow x \neq k\pi + \frac{\pi}{4}$

$$D_f = \mathbb{R} - \{\frac{k\pi}{4}, k\pi + \frac{\pi}{4} : k \in \mathbb{Z}\}$$

د) $y = \frac{\sin x + 1}{4\sin^2 x - 3}$ مخرج نباید صفر باشد. $\rightarrow 4\sin^2 x - 3 \neq 0 \rightarrow \sin^2 x \neq \frac{3}{4} \rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2}$

$$D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{3}, k\pi \pm \frac{2\pi}{3} : k \in \mathbb{Z}\}$$

$y = \frac{1}{\sqrt{2|x-2| - \frac{1}{x}}}$

$\rightarrow 2|x-2| - \frac{1}{x} > 0 \rightarrow 2|x-2| > \frac{1}{x} \rightarrow |x-2| > \frac{1}{2x}$

$x-2 < -\frac{1}{2x} \rightarrow x < \frac{4}{x}$
 $x-2 > \frac{1}{2x} \rightarrow x > \frac{4}{x}$

$$D_f = (-\infty, \frac{4}{x}) \cup (\frac{4}{x}, +\infty)$$

