

$$\text{الف) } y = \sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}} \Rightarrow \frac{(x-3)(x-1)}{(x-1)(x+1+x)} \geq 0 \Rightarrow \frac{1}{-x-1} \geq 0 \Rightarrow D_f = [3, +\infty)$$

5

$$\text{ب) } y = \sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}} \rightarrow \neq 0 \Rightarrow x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1 \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

9

$$\text{الف) } y = \log(x^2 - 4x) \Rightarrow x(x-4) > 0 \quad x$$

$$\frac{0}{+} \quad \frac{4}{-} \Rightarrow D_f = (-\infty, 0) \cup (4, +\infty)$$

$$\text{ب) } y = \log \frac{1-x}{1+x} \rightarrow \frac{(1-x)(1+x)}{(1-x)(1+x)} > 0$$

$$\frac{1}{1-x} > 0 \Rightarrow |x| < 1 \Rightarrow x < 1 \wedge x > -1$$

$$\rightarrow x \neq \pm 1$$

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$$\frac{-1}{-} \quad \frac{1}{+} \Rightarrow D_f = (-1, 1) - \{\pm 1\}$$

$$\text{ج) } y = \log \frac{x^2 - 4x + 3}{x-1} \rightarrow \frac{(x-3)(x-1)}{x-1} > 0$$

$$\frac{1}{1-x} > 0 \Rightarrow 1-x > 0 \Rightarrow x < 1$$

$$\frac{3}{+} \quad \frac{1}{-} \Rightarrow D_f = (3, 1) - \{1\}$$

$$\text{د) } y = \sqrt{x^2 - 11x + 18} + \log \frac{\sqrt{1-x}}{1+x} \rightarrow (1+x)(1-x) > 0$$

$$\frac{-1}{-} \quad \frac{1}{+} \Rightarrow D_f = (-1, 1) - \{1\}$$

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$$y = \frac{x^2 - x}{x^2 + x} \Rightarrow \frac{x(x-1)}{x(x+1)} \Rightarrow D_f = \mathbb{R} - \{0, -1\}$$

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$$\frac{-1}{+} \quad \frac{0}{-} \quad \frac{1}{+}$$

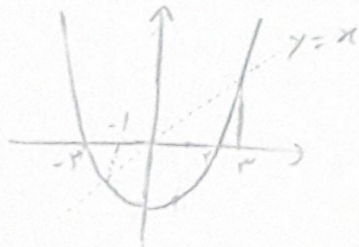
	-1	0	1
$x^2 - x$	-	+	+
$x^2 + x$	-	+	+
$p(x)$	+	-	+

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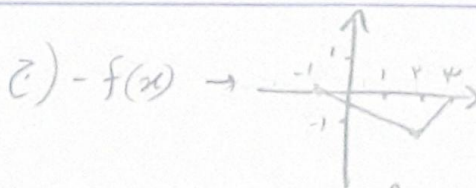
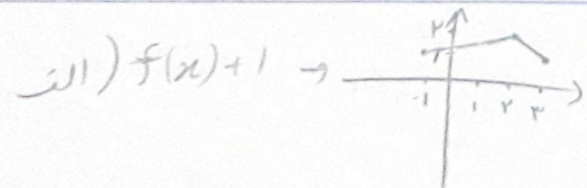
$$y = \sqrt{\frac{x-f(x)}{f(x)}} \rightarrow -1 < x$$

$$\frac{-1}{-} \quad \frac{1}{+} \Rightarrow D_f = (-1, 1] \cup (1, 3)$$

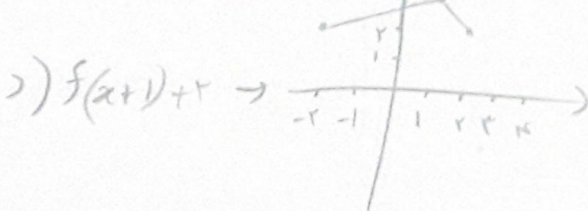
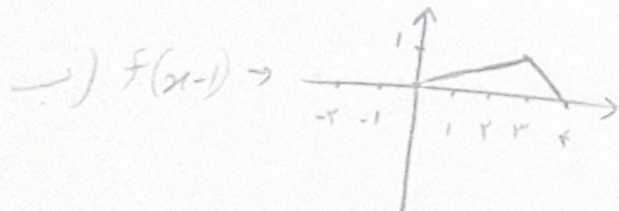
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