

$$\text{a)} \frac{x^2 - 4x + 3}{x^2 - 1} \geq 0 \leadsto \frac{(x-1)(x-3)}{x-1} \quad x \quad \begin{array}{ccc|ccc} & & & 1 & & 3 & \\ & & & - & 0 & - & + \end{array} \quad D_f = [3, +\infty)$$

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$$\text{b)} \begin{cases} \textcircled{1} \text{ جذور } \rightarrow D_f = R \\ \textcircled{2} x^2 - 1 \neq 0 \rightarrow x \neq \pm 1 \end{cases} \rightarrow D_f = R - \{-1, +1\} \subseteq R - \{\pm 1\}$$

$$\text{a)} x^2 - 3x > 0 \rightarrow x(x-3) > 0 \rightarrow \begin{cases} x < 0 \\ x > 3 \end{cases} \quad x \quad \begin{array}{ccc|ccc} & & & 0 & & 3 & \\ & & & + & 0 & - & + \end{array} \Rightarrow D_f = (-\infty, 0) \cup (3, +\infty)$$

$$\hookrightarrow R - [0, 3]$$

1, 2, 3

$$\text{b)} \begin{cases} |4 - x^2| > 0 \rightarrow x^2 < 4 \rightarrow -2 < x < 2 \\ |x| - 2 > 0 \rightarrow x > 2 \text{ or } x < -2 \\ |x| - 1 \neq 1 \rightarrow x \neq \pm 2 \end{cases} \Rightarrow D_f = (-2, -1) \cup (1, 2) - \{\pm 2\}$$

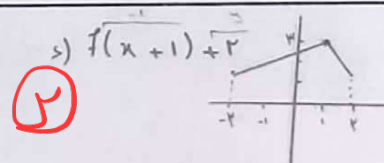
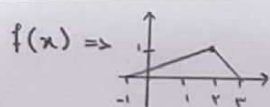
$$\text{c)} \begin{cases} \frac{x^2 - 5x + 4}{x - 2} > 0 \rightarrow \frac{(x-1)(x-4)}{x-2} \\ 10 - x > 0 \rightarrow 10 > x \text{ or } x \neq 9 \end{cases} \quad x \quad \begin{array}{ccc|ccc} & & & 1 & & 2 & & 4 & \\ & & & - & 0 & - & 0 & + \end{array} \rightarrow (4, +\infty) \Rightarrow D_f = (4, 10) - \{9\}$$

$$\text{d)} x^2 - 11x + 28 \geq 0 \rightarrow (x-4)(x-7) \geq 0 \quad x \quad \begin{array}{ccc|ccc} & & & 4 & & 7 & \\ & & & + & 0 & - & + \end{array} \Rightarrow (-\infty, 4] \cup [7, +\infty)$$

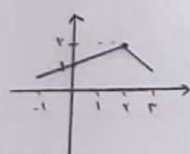
$$\text{e)} \frac{x^2 - x}{x^2 + x} \rightarrow \frac{x(x-1)}{x(x+1)} \rightarrow \begin{cases} x(x-1) \geq 0 \\ x(x+1) \leq 0 \end{cases} \quad x \quad \begin{array}{ccc|ccc} & & & -1 & & 0 & & 1 & \\ & & & + & 0 & - & 0 & + \end{array} \quad \begin{array}{ccc|ccc} x & & & -1 & & 0 & & 1 & \\ \frac{x^2 - x}{x^2 + x} & & & + & 0 & + & 0 & - & 0 & + \\ \frac{x^2}{x^2 + x} & & & + & 0 & - & 0 & + & + & + \\ P(x) & & & + & 0 & - & 0 & - & 0 & + \end{array}$$

$$\frac{x - f(x)}{f(x)} \geq 0 \rightarrow x = f(x) \xrightarrow{\text{مضاعف}} x^2 - 1 \rightarrow x = \pm 1$$

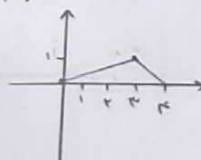
$$x \quad \begin{array}{ccc|ccc} & & & -2 & & -1 & & 1 & & 2 & \\ & & & - & 0 & + & 0 & - & 0 & + \end{array} \Rightarrow D_f = [-2, -1] \cup (1, 2]$$



$$\text{a)} f(x) + 1$$



$$\text{b)} f(x-1)$$



$$\text{c)} -f(x)$$

