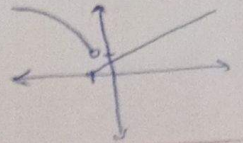


$$x = \begin{cases} 3y-1 & y \geq 0 \\ -y & y < 0 \end{cases}$$

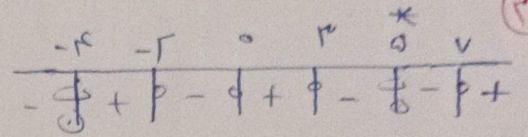
$$x = 3y-1 \rightarrow y = \frac{x+1}{3} \quad y \geq 0$$

$$x = -y \rightarrow -x = y \rightarrow y = \pm \sqrt{-x} \quad y > 0 \rightarrow y = +\sqrt{-x}$$

تابع هست



$$g(x) = \sqrt{\frac{x f(x-1)}{f(x)}} \Rightarrow \frac{x f(x-1)}{f(x)} \geq 0, f(x) \neq 0$$



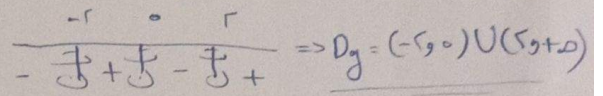
$$D_f: (-1, -1/2] \cup [0, 1] \cup [2, +\infty)$$

$$f(x) = \frac{3x^2 - 5x + 5}{x^2 - 5x}$$

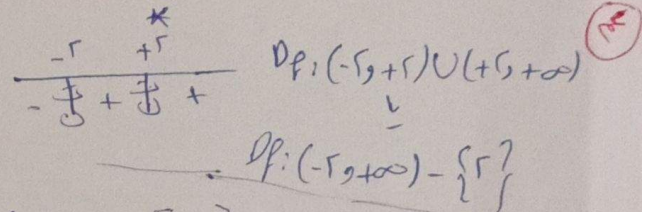
$$D_f: x^2 - 5x \neq 0, x(x-5)(x+5) \neq 0$$

$$D_f = \mathbb{R} - \{-5, 0, 5\}$$

$$g(x) = \sqrt{f(x)} = \sqrt{\frac{3x^2 - 5x + 5}{x^2 - 5x}} \Rightarrow \frac{3x^2 - 5x + 5}{x^2 - 5x} \geq 0$$



$$y = \sqrt{\frac{x-5}{x^2 - 5x^2 - 1}} = \sqrt{\frac{x-5}{(x-1)(x+1)(x^2+1)}}$$



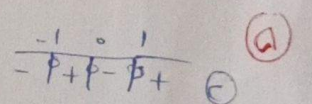
$$y = \frac{3x^2+1}{5-5[-x]} \rightarrow 5-5[-x] \neq 0 \rightarrow 5+5x \neq 0 \rightarrow -x \neq -1 \rightarrow x \neq 1$$

$$\rightarrow x \notin [-5, -1) \rightarrow D_f: \mathbb{R} - [-5, -1)$$

$$f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x+1|}}$$

$$|x+1| \geq 0 \rightarrow \begin{cases} x \geq -1 \\ x \leq -1 \end{cases} \rightarrow x \geq -1$$

$$x(x-1)(x+1) \geq 0$$



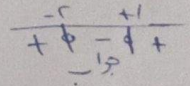
$$D_f: [1, +\infty)$$

$$f(x) = \frac{\sqrt{|x-1| - x^2}}{|x|-1}$$

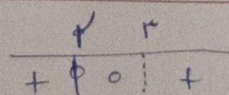
$$x \neq 1, x \neq -1$$

$$|x-1| \geq x^2 \rightarrow x^2 - x + 1 \leq 0 \rightarrow (x-1/2)^2 \geq 3/4 \rightarrow x \leq -1/2 \text{ or } x \geq 3/2$$

$$D_f: [-1/2, +1) - \{1\}$$



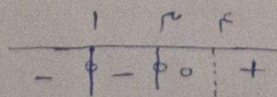
$$y = \sqrt{(x-1)[x-3]} \rightarrow (x-1)[x-3] \geq 0$$



$$D_f: \mathbb{R}$$

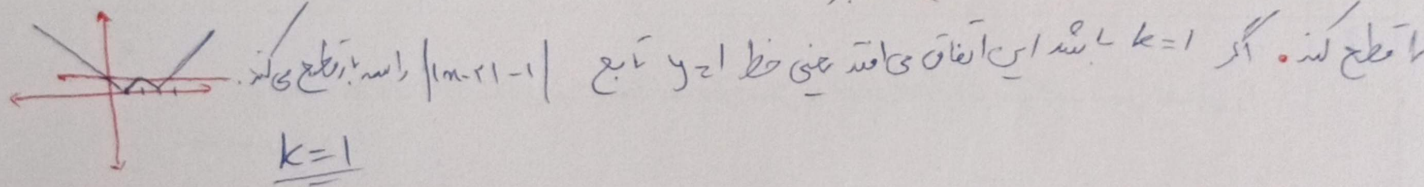
$$y = \sqrt{|x-1|[x-3]}$$

$$|x-1|[x-3] \geq 0$$



$$D_f: [3, +\infty) \cup \{1\}$$

(۷) برای آینه دانه شامل ۳ عدد می باشد و خروج باید صفر شود یعنی خط $y = k$ بار خنجر تابع $|m-1-1|$ $|x-1-1| = k$



(۸) $f(x) = \frac{x^5 + 2x + 1}{x^5 + 2x + 1}$ $x^5 + 2x + 1 = (x+1)(x+1)$ $D_f: \mathbb{R} - \{-1, -1\} \Rightarrow n=2$

$\frac{x+1}{x-1}$ $\left\{ \begin{array}{l} x \neq 1 \\ x \neq -1 \end{array} \right.$ $x^5 - 2x + 2 = 0 \xrightarrow{n=2} x^5 - 4 + 4 = 0 \Rightarrow \Delta = 0 \Rightarrow$

یک جواب دارد

$y = \log_{a+1} \log_{\frac{1}{x}}$ $x > 0$ (۱) $\log_{\frac{1}{x}} > 0$ و $\log_{\frac{1}{x}} \neq 1 \Rightarrow \log x$

$\log_b^a = \frac{\log_c^a}{\log_c^b} \Rightarrow \log_{\frac{1}{x}}^1 = \frac{\log_{\frac{1}{x}}^1}{\log_{\frac{1}{x}}^1} > 0 \Rightarrow$

اینجا متنی است و حاصل کل کسر مثبت بنابراین

$\log x < 0 \Rightarrow 0 < x < 1$ (۹)

خروج هم باید مثبت باشد یعنی $\log x < 0$

$(1) \cap (9) \Rightarrow D_f: (0, 1)$

(۱۰) $f(x)$, $-4 \leq x \leq 2$ $f(2x^2-1) \Rightarrow -4 \leq 2x^2-1 \leq 1 \Rightarrow -4 \leq 2x^2 \leq 2$

$\frac{-2 \pm \sqrt{4-4}}{2} \Rightarrow 2x^2 \leq 2 \Rightarrow x^2 \leq \frac{2}{2} \Rightarrow -\sqrt{\frac{2}{2}} \leq x \leq \sqrt{\frac{2}{2}} \Rightarrow D_f: [-\sqrt{\frac{2}{2}}, \sqrt{\frac{2}{2}}]$

نیز از آنجا که $-4 \leq 2x^2-1 \leq 1$ پس $-3 \leq 2x^2 \leq 2$ $x^2 \leq 1$ $-1 \leq x \leq 1$