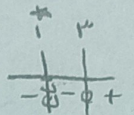


الف) $y = \sqrt{\frac{x^3 - 3x + 3}{x^3 - 1}} \Rightarrow$

① $x^3 - 1 \neq 0 \Rightarrow x^3 \neq 1 \Rightarrow x \neq 1$

② $\frac{(x-1)(x^2+x+1)}{x^3-1} > 0 \Rightarrow x = 3, +\infty$

$D_f = [3, +\infty)$

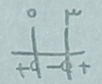


ب) $y = 3 \sqrt{\frac{x^3 - 3x + 3}{x^3 - 1}} \Rightarrow x^3 - 1 \neq 0 \Rightarrow x^3 \neq 1 \Rightarrow x \neq \pm 1$

$D_f = \mathbb{R} - \{\pm 1\}$

الف) $y = \log(x^3 - 3x) \Rightarrow x^3 - 3x > 0 \Rightarrow x(x-3) > 0$

$D_f = (-\infty, 0) \cup (3, +\infty)$



ب) $y = \log \frac{14-x^2}{|x|-2} \Rightarrow$

① $14-x^2 > 0 \Rightarrow -x^2 > -14 \Rightarrow x^2 < 14 \Rightarrow -\sqrt{14} < x < \sqrt{14}$

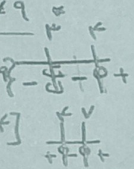
② $|x|-2 > 0 \Rightarrow |x| > 2 \Rightarrow x > 2, x < -2 \Rightarrow x \neq 1$

$D_f = (2, \sqrt{14}) \cup (-\sqrt{14}, -2) - \{1\}$

$\ln|1-x| \rightarrow \ln|1-x| \rightarrow x \neq \pm 1$

ج) $y = \log \frac{x-3}{x^2-1} \Rightarrow \frac{x-3}{x^2-1} > 0 \Rightarrow x-3 > 0, x^2-1 > 0 \Rightarrow x > 3, x > 1, x < -1 \Rightarrow x > 3$

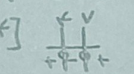
$D_f = (3, +\infty)$



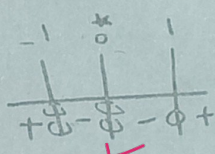
د) $y = \sqrt{x^2 - 11x + 28} + \log \frac{\sqrt{4-x^2}}{x} \Rightarrow$

① $(x-4)(x-7) \geq 0 \Rightarrow x = (-\infty, 4] \cup [7, +\infty)$

$D_f = (0, 4] \cup [7, 4]$



$y = \frac{x^2 - x}{x^2 + x}$



ردیف سریع

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

ردیف آبارستانی

عبارت های کسری! باید یقین علامت کنی!

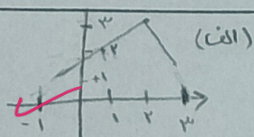
الف) $y = \sqrt{\frac{x-f(x)}{f(x)}} \Rightarrow \frac{x-f(x)}{f(x)} > 0 \Rightarrow x-f(x) > 0, f(x) > 0$

ب) $x-f(x) < 0 \Rightarrow x < f(x), f(x) < 0$

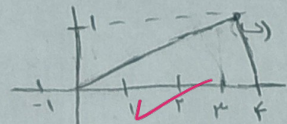
ج) $f(x) \neq 0 \Rightarrow x \neq -1, x \neq 3$

$D_f = (0, 2) \cup (-2, -1) \cup (3, +\infty)$

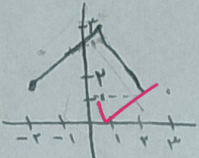
الف) $f(x) + 1$



ب) $f(x-1)$



ج) $-f(x)$



د) $f(x+1) + 2$

