

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

ب) $\sqrt{\frac{(x-1)(x-2)}{(x-1)(x+1)}} \Rightarrow Df = \mathbb{R} - \{-1, 1\}$

الف) $x^2 - 2x > 0 \Rightarrow x(x-2) > 0 \Rightarrow \frac{0}{x} - \frac{2}{x-2} > 0 \Rightarrow (-\infty, 0) \cup (2, +\infty)$

ب) $14 - x^2 > 0 \Rightarrow 14 > x^2 \Rightarrow \pm \sqrt{14} > x$
 $|x-2| > 0 \Rightarrow |x| > 2 \Rightarrow x < -2 \text{ or } x > 2 \Rightarrow (-2, 2) \cup (-\infty, -2) \cup (2, +\infty)$

ج) $\frac{(x-2)(x-1)}{x-2} > 0 \Rightarrow \frac{10-x}{10-x-1} > 0 \Rightarrow \frac{10-x}{9-x} > 0 \Rightarrow (2, 10) - \{9\}$

د) $(x-1)(x-4) > 0 \Rightarrow x^2 - 5x + 4 > 0 \Rightarrow x < 1 \text{ or } x > 4 \Rightarrow (-\infty, 1) \cup (4, +\infty)$

$\frac{x^2-x}{x^2+x} \Rightarrow \frac{x(x-1)}{x(x+1)}$

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

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

هـ) $y = \sqrt{x-f(x)} \Rightarrow Df = (-\infty, -2) \cup (2, +\infty) \cup \{-1\}$

$x - f(x) \geq 0$

$f(x) = 0 \rightarrow x = -2, 2$

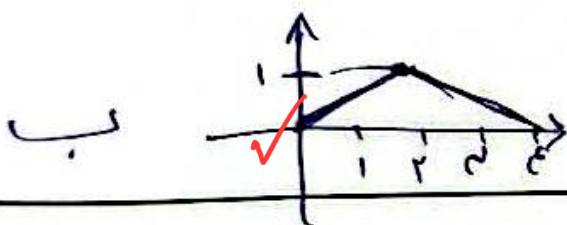
$x - f(x) = 0 \rightarrow x = f(x) \rightarrow x = -1, 3$

$\frac{-2}{x} + \frac{-1}{x+1} - \frac{2}{x-1} + \frac{3}{x-3} > 0$

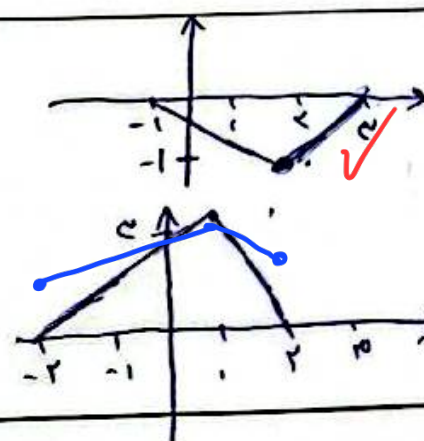
$Df = (-2, -1] \cup (2, 3]$



ج)



د)



از آنجایی که جمع فرایب منفر و ~~مجموع فرایب توان~~ $D_f = \mathbb{R} - \{1, 1.5, 2, 5\}$

(۱۵)

$$(n-1)(n-0)(n-3) \neq 0$$

مجموع فرایب توان (ب) $\Rightarrow D_f = \mathbb{R} - \{-1, \frac{2}{3}\}$

$$(n+1)(n-2)(n+1) \neq 0$$

الف) $\frac{x+1}{x-\sqrt{2-x}} \Rightarrow x-\sqrt{2-x} \neq 0 \Rightarrow x \neq \sqrt{2-x} \Rightarrow x^2 \neq 2-x \Rightarrow x^2+x-2 \neq 0 \Rightarrow (x+2)(x-1) \neq 0 \Rightarrow D_f = \mathbb{R} - \{-2, 1\} \rightarrow (-\infty, \frac{2}{3}] - \{1\}$

ب) $x-\sqrt{2-x} \Rightarrow x \neq \sqrt{2-x} \Rightarrow x^2 \neq 2-x \Rightarrow x^2+x-2 \neq 0 \Rightarrow (x+2)(x-1) \neq 0 \Rightarrow D_f = \mathbb{R} - \{1, 2\} \rightarrow [\frac{2}{3}, +\infty) - \{1, 2\}$

الف) $y = \frac{\sin x}{\sqrt{\cos x - 1}}$
 $\cos x \neq 1 \Rightarrow x \neq 2k\pi$
 $\cos x \neq \frac{1}{2} \Rightarrow x \neq \frac{\pi}{3} + 2k\pi$
 $D_f = \mathbb{R} - \{2k\pi, \frac{\pi}{3} + 2k\pi\}$

ب) $y = \frac{\cos x + 1}{\sqrt{\sin x + 1}}$
 $\sin x \neq -1 \Rightarrow x \neq \frac{3\pi}{2} + 2k\pi$
 $D_f = \mathbb{R} - \{\frac{3\pi}{2} + 2k\pi\}$

ج) $y = \frac{\tan x + 2}{\cos x - 1}$
 $\cos x \neq 1 \Rightarrow x \neq 2k\pi$
 $D_f = \mathbb{R} - \{2k\pi\}$

د) $y = \frac{\sin x + 1}{\sqrt{\sin^2 x - c}}$
 $\sin^2 x \neq c \Rightarrow \sin x \neq \pm \sqrt{c}$
 $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}\}$

الف) $(x-2)(x-5) > 0 \Rightarrow \frac{1}{x-2} - \frac{1}{x-5} > 0 \Rightarrow (-\infty, 2) \cup (5, +\infty)$

ب) $(x-1)(x-5) < 0 \Rightarrow \frac{1}{x-1} - \frac{1}{x-5} < 0 \Rightarrow (1, 5)$

ج) $(x+1)(x+5) > 0 \Rightarrow \frac{-1}{x+1} - \frac{-1}{x+5} > 0 \Rightarrow (-\infty, -5] \cup [-1, +\infty)$

د) $(x-1)(x-4) < 0 \Rightarrow \frac{1}{x-1} - \frac{1}{x-4} < 0 \Rightarrow [1, 4]$

الف) $\frac{(x-1)(x-2)}{x-5} < 0 \Rightarrow \frac{1}{x-1} - \frac{2}{x-5} < 0 \Rightarrow (-\infty, 1) \cup (2, 5)$

ب) $\frac{(x-1)(x+1)}{(x-1)(x-5)} > 0 \Rightarrow \frac{-1}{x-1} - \frac{1}{x-5} > 0 \Rightarrow (-\infty, -1] \cup (5, +\infty)$