

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

ب) $\sqrt{\frac{(x-1)(x-2)}{(x-1)(x+1)}} \Rightarrow D_f = \mathbb{R} - \{-1, 1\}$ (5)

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

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

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

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

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

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

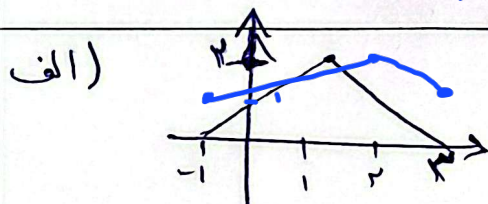
x^2-x	-	0	1	
	+	+	-	+
x^2+x	+	-	+	+
$f(x)$	+	-	-	+

$y = \sqrt{\frac{x-f(x)}{f(x)}} \Rightarrow D_f = (-\infty, -2) \cup (2, +\infty) \cup \{-1\}$ (3)

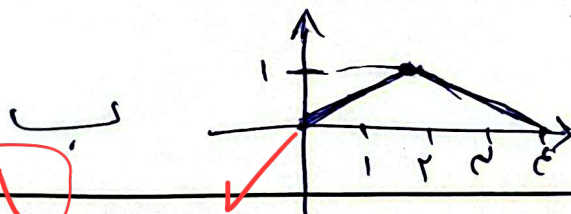
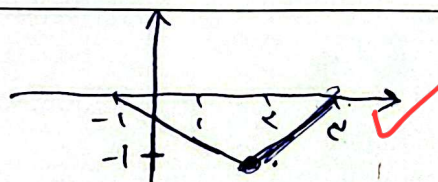
$D_f = [-2, -1] \cup (1, 2]$

$f(x) = 0 \rightarrow x = -2, 2$
 $x - f(x) = 0 \rightarrow x = f(x) \rightarrow x = -1, 1$

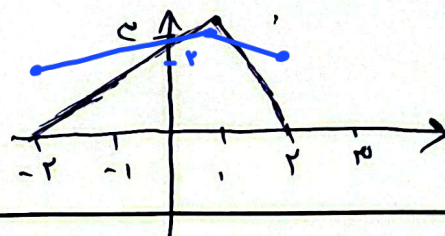
$\frac{-2}{-} - \frac{-1}{+} - \frac{1}{-} - \frac{2}{-}$



ج)



د)



الف) از آنجایی که جمع فرایب منفی و ... $D_f = \mathbb{R} - \{1, 1/5, 2, 5\} \quad (x-1)(x-5)(x-2) \neq 0$

ب) مجموع فرایب توان (ب) $\Rightarrow D_f = \mathbb{R} - \{-1, \frac{2}{5}, 2\} \quad (x+1)(x-2)(x+2) \neq 0$

الف) $\frac{x+1}{x-\sqrt{2x-2}} \Rightarrow x - \sqrt{2x-2} \neq 0 \Rightarrow x \neq \sqrt{2x-2} \Rightarrow x^2 \neq 2x-2 \Rightarrow x^2 - 2x + 2 \neq 0$
 $\Rightarrow x^2 + 2x - 2 \neq 0 \Rightarrow (x+2)(x-1) \neq 0 \Rightarrow D_f = \mathbb{R} - \{-2, 1\} \quad D_f = (-\infty, \frac{2}{5}] - \{1\}$

ب) $x - \sqrt{2x-2} \Rightarrow x \neq \sqrt{2x-2} \Rightarrow x^2 \neq 2x-2 \Rightarrow x^2 - 2x + 2 \neq 0$
 $\Rightarrow (x-2)(x-1) \neq 0 \Rightarrow D_f = \mathbb{R} - \{1, 2\} \quad D_f = [\frac{2}{5}, +\infty) - \{1, 2\}$

الف) $y = \frac{\sin x}{2\cos x - 1}$
 $2\cos x \neq 1$
 $\cos x \neq \frac{1}{2} \quad x \neq \frac{\pi}{3}, \frac{5\pi}{3}$
 $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\}$

ب) $y = \frac{\cos x + 1}{2\sin x + 1}$
 $2\sin x \neq -1$
 $\sin x \neq -\frac{1}{2} \quad x \neq \frac{7\pi}{6}, \frac{11\pi}{6}$
 $D_f = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$

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

د) $y = \frac{\sin x + 1}{5\sin x - 2}$
 $5\sin x \neq 2$
 $\sin x \neq \frac{2}{5}$
 $\sin x \neq \pm \frac{\sqrt{25-4}}{5}$
 $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{5}, k\pi + \frac{7\pi}{5}\}$

الف) $(x-2)(x-5) > 0 \Rightarrow + \quad - \quad - \quad + \Rightarrow (-\infty, 2) \cup (5, +\infty)$

ب) $(x-1)(x-5) < 0 \Rightarrow - \quad + \quad - \quad + \Rightarrow (1, 5)$

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

د) $(x-1)(x-4) < 0 \Rightarrow - \quad + \quad - \quad + \Rightarrow [1, 4]$

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

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