

$$2x^3 + 3x^2 - 11x + 3 \neq 0 \rightarrow (x-1)(x+3)(2x-1) \neq 0 \rightarrow R = \left[-3, 1, \frac{1}{2}\right]$$

$\downarrow \quad \downarrow \quad \downarrow$
 $x \neq 1 \quad x \neq -3 \quad x \neq \frac{1}{2}$

ب) $2x^3 + 9x^2 + 10x + 3 \neq 0 \rightarrow (x+1)(2x+1)(x+3) \neq 0$

$\downarrow \quad \downarrow \quad \downarrow$
 $x \neq -1 \quad x \neq -\frac{1}{2} \quad x \neq -3$

$R - \left\{-1, -\frac{1}{2}, -3\right\} = D_f$

الف) $\frac{x+3}{x^3 - 2x^2 + 2x - 1} > 0 \rightarrow (x-1)(x^2 - x + 1) > 0$ $\rightarrow R = \{1\}$

$\downarrow \quad \downarrow$
 $x \neq 1$ همیشه مثبت

ب) $\sqrt{\frac{x+3}{x^3 - 2x^2 + 2x - 1}} > 0 \rightarrow x \geq -3$

$\downarrow \quad \downarrow$
 $x \neq 1$ همیشه مثبت

$\rightarrow (-\infty, -3] \cup [1, \infty)$

$\frac{2}{x^2 - 5|x-1| - 2x + 5} > 0 \rightarrow D_f = R - \{0, 1, 2, 3, 4, 5\}$

$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $x \neq -3, x \neq 2, x \neq 4, x \neq 0$

ضرب می کنیم
 $x^2 - 5|x-1| - 2x + 5 \rightarrow x^2 - 7x + 10 \rightarrow (x-2)(x-5)$
 $x^2 - 5|x-1| - 2x + 5 = x^2 + 3x \rightarrow x(x+3) > 0$

الف) $\sqrt{[-x] - 2} > 0 \rightarrow [x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2 \rightarrow D = \{-2, -3, -4, \dots\}$

ب) $\frac{5x^2 + 9}{[x]^3 - 2x - 3} \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0 \rightarrow R = \{x \mid [x] \neq 3, [x] \neq -1\}$

$\downarrow \quad \downarrow$
 $[x] \neq 3 \rightarrow x \in [3, 4) \cup [4, 5) \cup \dots$
 $[x] \neq -1 \rightarrow x \in [-1, 0) \cup [0, 1) \cup \dots$

الف) $\sqrt{[x - \frac{1}{3}] + [x + \frac{2}{3}]} > 0 \rightarrow 2[c] + 1 > 0 \rightarrow [c] > -\frac{1}{2} \rightarrow c > -\frac{1}{2}$

$\downarrow \quad \downarrow$
 $[c] \quad [c+1]$

$D = [\frac{1}{3}, +\infty) \leftarrow x - \frac{1}{3} > 0 \rightarrow x > \frac{1}{3}$

ب) $\sqrt{[x - \frac{1}{3}] + [\frac{1}{3} - x]} > 0 \rightarrow [c] + [c] > 0 \rightarrow D = [\frac{1}{3}, +\infty)$

$\downarrow \quad \downarrow$
 $\frac{1}{3} = x$

$x = \frac{\cos x + 1}{\tan x + 1} = \frac{\cos}{\frac{\sin}{\cos}} \rightarrow \neq 0 \rightarrow kx \neq x$ $\downarrow \tan \neq -1 \rightarrow \frac{\pi}{2} + kx$	$D = R - \left\{ \frac{kx}{2}, \frac{-x}{2} + kx \right\}$ $k \in \mathbb{Z}$
$ب) \sqrt{1 - \sin^2 x} \geq 0 \rightarrow \sin^2 x \leq 1 \rightarrow \sin^2 \leq \frac{1}{4} \rightarrow \sin \leq \frac{1}{2} \rightarrow$	$R - \left\{ \frac{\pi}{6}, \frac{5\pi}{6} \right\}$
$الف) y = \sqrt{\sin x - 1} \geq 0 \rightarrow \sin x \geq 1 \rightarrow \sin \geq \frac{1}{2} \rightarrow R - \left\{ kx + \frac{\pi}{6}, kx + \frac{5\pi}{6} \right\}$	$k \in \mathbb{Z}$
$ب) y = \sqrt{1 - \cos x} \geq 0 \rightarrow \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{2} \rightarrow$ $D = R - \left\{ 2kx + \frac{\pi}{3}, 2kx + \frac{5\pi}{3} \right\}$	$k \in \mathbb{Z}$
$الف) x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0$ $D = (-3, -2], [-1, 0]$ $x = -1, x = -2$	$x = 0, x = -3 \in x(x+3) \leq 0$
$ب) \cos y = \sqrt{a - 2x} \leq 1 \rightarrow 2x \geq a \rightarrow x \geq \frac{a}{2}$ $\sqrt{a - 2x} \geq 0 \rightarrow 2x \leq a \rightarrow x \leq \frac{a}{2}$	$D = \left[\frac{a}{2}, \frac{a}{2} \right]$
$الف) \sqrt{4x - x^2} - 1 \geq 0 \rightarrow \sqrt{4x - x^2} \geq 1 \rightarrow 4x - x^2 \geq 1 \rightarrow x(4 - x) = 1 \rightarrow x = 1$	$D = \{3, 1\}$
$ب) \left(\frac{3x + a}{2x + 1} \right) ! \rightarrow 3x + a = 2x + 1 \rightarrow x = 1 - a$	$D = \left\{ x \mid x = \frac{a - 1}{2}, k \in \mathbb{Z} \right\} \leftarrow x = \frac{-a + 1}{2x + 1}$