

|                                                                                                                                                                           |                                                                                                                                                         |                                                                                                         |                                                                               |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---|
| <p>(الف)</p>                                                                                                                                                              | <p>(ب)</p> <p>(2) ✓</p>                                                                                                                                 | <p>(ج)</p>                                                                                              | <p>(د)</p>                                                                    | 1 |
| <p>(الف)</p> $(x-2)(x-3) > 0$ $\frac{2}{+} \frac{3}{-} \frac{3}{+}$ $(-\infty, 2) \cup (3, +\infty)$                                                                      | <p>(ب)</p> $(x-1)(x-5) < 0$ $\frac{1}{+} \frac{5}{-} \frac{5}{+}$ $(1, 5)$ <p>(2) ✓</p>                                                                 | <p>(ج)</p> $(x+5)(x+1) > 0$ $\frac{-5}{+} \frac{-1}{-} \frac{-1}{+}$ $(-\infty, -5] \cup [-1, +\infty)$ | <p>(د)</p> $(x-4)(x-1) \leq 0$ $\frac{1}{+} \frac{4}{-} \frac{4}{+}$ $[1, 4]$ | 2 |
| <p>(الف)</p> $\frac{(x-2)(x-1)}{x-5} < 0$ $\frac{1}{-} \frac{2}{+} \frac{5}{-} \frac{5}{+}$ $(-\infty, 1) \cup (2, 5)$ <p>(2) ✓</p>                                       | <p>(ب)</p> $\frac{(x-1)(x+1)}{(x-5)(x-1)} \geq 0$ $\frac{-1}{+} \frac{1}{-} \frac{5}{-} \frac{5}{+}$ $(-\infty, -1] \cup (5, +\infty)$                  |                                                                                                         |                                                                               | 3 |
| $\frac{x^3-1}{x(x^2-1)} \geq 0$ $\frac{1}{+} \frac{-1}{-} \frac{1}{+} \frac{1}{+}$ $(-\infty, -1) \cup (0, 1) \cup (1, +\infty)$ <p>(2) ✓</p>                             | $\frac{(x+4)(x-4)}{(x-4)(x-1)} \geq 0$ $\frac{-4}{+} \frac{4}{-} \frac{1}{+} \frac{1}{+}$ $(-\infty, -4] \cup (1, 4) \cup (4, +\infty)$                 |                                                                                                         |                                                                               | 4 |
| <p>(الف)</p> $2-x \geq 0 \rightarrow x \leq 2$ $4-\sqrt{2-x} \geq 0 \rightarrow [-14, 2]$ $4 \geq \sqrt{2-x} \rightarrow 16 \geq 2-x \rightarrow x \geq -14$ <p>(2) ✓</p> | <p>(ب)</p> $x-2 \geq 0 \rightarrow x \geq 2$ $3-\sqrt{x-2} \geq 0 \rightarrow 3 \geq \sqrt{x-2}$ $9 \geq x-2 \rightarrow 11 \geq x \rightarrow [2, 11]$ |                                                                                                         |                                                                               | 5 |

الف)

$$4 - 2x^2 \geq 0$$

$$4 \geq 2x^2$$

$$2 \geq x^2$$

$$\rightarrow \sqrt{2} \leq x \leq +\sqrt{2}$$

✓

$$[-\sqrt{2}, \sqrt{2}]$$

ب)

$$3|x| - 9 \geq 0$$

$$3|x| \geq 9 \rightarrow (-\infty, -3] \cup [3, +\infty)$$

$$|x| \geq 3 \rightarrow x \leq -3$$

$$x \leq -3$$

الف)  $|x| - 3 \neq 0 \rightarrow |x| = 3 \rightarrow x = \pm 3$

$$D_f = \mathbb{R} - \{\pm 3\}$$

ب)  $\sqrt{x} - 3 \neq 0 \rightarrow \sqrt{x} = 3 \rightarrow x = 9$

$$D_f = \mathbb{R} - \{9\}$$

9

راديكان بايد تعريف شود

ل.د

الف)  $2\cos x - 1 = 0 \rightarrow \cos x = \frac{1}{2} \rightarrow D_f = \mathbb{R} - \{2K\pi + \frac{\pi}{3}, 2K\pi + \frac{5\pi}{3}\}$

ب)  $2\sin x + 1 = 0 \rightarrow \sin x = -\frac{1}{2} \rightarrow D_f = \mathbb{R} - \{2K\pi + \frac{7\pi}{6}, 2K\pi + \frac{11\pi}{6}\}$

ج)  $\tan x$

$\cot x \neq 1$

$$D_f = \mathbb{R} - \{\frac{K\pi}{2}, 2K\pi \pm \frac{\pi}{4}\}$$

د)  $\sin^2 x - 3 \neq 0$   
 $\sin^2 x \neq \frac{3}{2}$   
 $\sin x \neq \pm \sqrt{\frac{3}{2}}$   
 $D_f = \mathbb{R} - \{K\pi \pm \frac{\pi}{4}\}$

$$2|x-2| - \frac{1}{x} \geq 0$$

$$D_f = (-\infty, \frac{1}{x}) \cup (2\frac{1}{x}, +\infty)$$

$$2|x-2| \geq \frac{1}{x}$$

$$|x-2| \geq \frac{1}{2x}$$

$$x-2 < \frac{1}{2x} \rightarrow x < 1\frac{1}{x}$$

$$x-2 > \frac{1}{2x} \rightarrow x > 2\frac{1}{x}$$

الف)  $4 - 2|x| \geq 0$

$$4 \geq 2|x|$$

$$2 \geq |x|$$

$$[-2, 2]$$

ب)

$$\frac{|x|}{|x|} \geq 0 \quad D_f = \mathbb{R} - \{0\}$$

✓