

تکلیف ۲

(مسئله ۱)

۱ و ۱

آریتیا آفاصلی

(ب) $3x^3 - x^2 - 11x - 2 \neq 0$

$(3x^2 - 4x - 2)(x+1) \neq 0$ ۱ و ۱

~~$D_f = \mathbb{R} - \{-1, 2\}$~~

(الف) $4x^3 - 20x^2 + 25x - 10 \neq 0$

$(2x-5)(2x-2)(x-1) \neq 0$ ۱ و ۱

~~$D_f = \mathbb{R} - \{1, 2, \frac{5}{2}\}$~~

$x - \sqrt{3x-2} \neq 0$

$x \neq \sqrt{3x-2}$

$3x-2 \geq 0$

$3x \geq 2$

$x \geq \frac{2}{3}$

~~$D_f = [\frac{2}{3}, +\infty) - \{\sqrt{3x-2}\}_{x \in \mathbb{R}}$~~

(الف) $x - \sqrt{3x-2} \neq 0$

$x \neq \sqrt{3x-2}$

$x^2 \neq 3x-2 \rightarrow x^2 + 2x - 3 \neq 0$

$x \neq -3$

$x \neq 1$

$3x-2 \geq 0$

$3 \geq 2x$

$\frac{3}{2} \geq x$

~~$D_f = (-\infty, \frac{3}{2}] - \{\sqrt{3x-2}\}_{x \in \mathbb{R}}$~~

(ب) $\sin x \neq -\frac{1}{2}$ ۱ و ۱

$D_f = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$

$2 \sin^2 x \neq 1$

$\sin^2 x \neq \frac{1}{2}$

$\sin x \neq \pm \frac{\sqrt{2}}{2}$

$D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{4}\}$

(الف) $2 \cos x - 1 \neq 0$

$\cos x \neq \frac{1}{2}$

$D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\}$

$x \neq k\pi + \frac{\pi}{2} \rightarrow \cot x \neq 1$ ۱ و ۲

$\sin x \neq 0, \cos x \neq 0$

$x \neq k\pi$

$D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\}$

(ب) $(x-1)(x-5) < 0$

$D_f = (1, 5)$

(ج) $(x-1)(x-5) \leq 0$

$D_f = [1, 5]$

(الف) $(x-1)(x-5) > 0$

$D_f = (-\infty, 1) \cup (5, +\infty)$

(ج) $(x+1)(x+5) \geq 0$

$D_f = (-\infty, -5] \cup [-1, +\infty)$

$$\frac{x^2-1}{(x-1)(x-4)} \geq 0$$

(ب)

$$\frac{(x-1)(x-2)}{x-4} < 0$$

(الف) (5)

$$D_f = (-\infty, -1] \cup (4, +\infty)$$

$$D_f = (-\infty, 1) \cup (2, 4)$$

$$x^2-1 \neq 0$$

(ب)

$$\frac{(x-1)(x-2)}{x^2-1} \geq 0$$

(الف) (2)

$$x^2 \neq 1$$

$$x \neq \pm 1 \quad D_f = \mathbb{R} - \{\pm 1\}$$

$$D_f = [2, +\infty)$$

$$19 - x^2 > 0 \quad -9 < x < 5 \quad 19 > x^2 \quad (5, +5)$$

(ب) 0, 2, 5

$$x(x-2) > 0 \quad 0, 2, 5$$

(الف) (1, 5, 5)

$$|x| - 2 > 0$$

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

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

$$x < -2$$

$$|x| > 2 \quad x > 2$$

$$|x| - 2 \neq 0 \quad |x| \neq 2 \quad x \neq \pm 2$$

$$(2x-4)(x-5) \geq 0 \quad (-\infty, 2] \cup (5, +\infty)$$

$$\frac{(x-2)(x-3)}{x-2} > 0 \quad (2, +\infty)$$

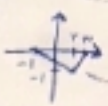
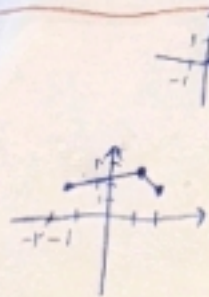
$$\sqrt{19-x^2} > 0 \quad (-5, 5) \quad 19 > x^2 \quad x > 0 \quad x \neq 1 \quad D_f = (0, 4] - \{1\}$$

$$10 - x > 0 \quad 10 - x \neq 0 \quad x \neq 10 \quad 10 > x \quad (-\infty, 10) \quad D_f = (-\infty, 10) - \{9\}$$

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

$$\frac{x(x-1)}{x(x+1)}$$

$$\frac{x(x-1)}{x(x+1)}$$



(الف) (2)

$$\frac{x - f(x)}{f(x)} \geq 0 \quad \checkmark f(x) \neq 0 \quad D_f = [2, 4]$$