

الف) $y = \frac{x+4}{x^3-2x^2+3x-15} \rightarrow (x-1)(x^2-14x+15)$ $\rightarrow x=1$ و $x=\frac{3}{2}$ و $x=\frac{5}{2}$ $\rightarrow D_f = \mathbb{R} - \{1, \frac{3}{2}, \frac{5}{2}\}$

جمع فکری من

ب) $y = \frac{x+3}{3x^3-x-8x^2-7} \rightarrow (x+1)(3x^2-4x-7)$ $\rightarrow x=-1$ $\rightarrow D_f = \mathbb{R} - \{-1, -\frac{7}{3}, 2\}$

جمع فکری من

الف) $y = \frac{x+1}{x-\sqrt{3-2x}}$ $3-2x \geq 0 \rightarrow x \leq \frac{3}{2}$ $x-\sqrt{3-2x} > 0 \rightarrow x > \sqrt{3-2x}$ $\rightarrow x^2 > 3-2x \rightarrow x^2+2x-3 > 0 \rightarrow (x+3)(x-1) > 0$ $\rightarrow x < -3$ یا $x > 1$ $\rightarrow D_f = (-\infty, -3) \cup (1, \frac{3}{2}]$

ب) $y = \frac{x+2}{x-\sqrt{3x-2}}$ $3x-2 \geq 0 \rightarrow x \geq \frac{2}{3}$ $x-\sqrt{3x-2} > 0 \rightarrow x > \sqrt{3x-2}$ $\rightarrow x^2 > 3x-2 \rightarrow x^2-3x+2 > 0 \rightarrow (x-1)(x-2) > 0$ $\rightarrow x < 1$ یا $x > 2$ $\rightarrow D_f = [\frac{2}{3}, 1) \cup (2, +\infty)$

الف) $y = \frac{\sin x}{\cos x + \frac{1}{2}}$ $D_f = \{k\pi \pm \frac{\pi}{2}\}$ $\rightarrow \sin x \neq 0$ $\rightarrow x \neq k\pi$ $\rightarrow D_f = \{k\pi, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$

ب) $y = \frac{\cos x + 1}{\sin x + \frac{1}{2}}$ $D_f = \{k\pi - \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$ $\rightarrow \cos x + 1 \neq 0$ $\rightarrow x \neq \frac{3\pi}{2} + 2k\pi$ $\rightarrow D_f = \{k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2}\}$

الف) $x^2 - 5x + 4 > 0$ $\rightarrow (x-3)(x-2) > 0$ $\rightarrow D_f = (-\infty, 2) \cup (3, +\infty)$

ب) $x^2 - 4x + 5 < 0$ $\rightarrow (x-5)(x-1) < 0$ $\rightarrow D_f = (1, 5)$

الف) $\frac{x^2-3x+2}{x-5} < 0$ $\rightarrow \frac{(x-2)(x-1)}{x-5} < 0$ $\rightarrow D_f = (-\infty, 1) \cup (2, 5)$

ب) $\frac{x^2-1}{x^2-4x+5} > 0$ $\rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)} > 0$ $\rightarrow D_f = (-\infty, -1] \cup (5, +\infty)$

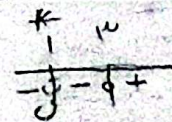
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1) $y = \sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}}$ $\frac{(x-3)(x-1)}{(x-1)(x^2 + x + 1)} \rightarrow x = 3, 1$
 $\frac{(x-1)(x^2 + x + 1)}{(x-1)(x^2 + x + 1)} \rightarrow x = +1$



2) $y = \sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}}$ $\rightarrow D_f = \mathbb{R} - \{\pm 1\}$
 $x^2 - 1 \rightarrow \neq 0 \rightarrow x \neq \pm 1$

3) $y = \log \frac{(x^2 - 3x)}{x(x-3)}$ $\frac{(x-3)(x)}{x(x-3)}$ $D_f = (-\infty, 0) \cup (3, +\infty)$
 4) $y = \log \frac{x^2 - 4x + 3}{x-3}$ $\frac{(x-3)(x-1)}{x-3} \rightarrow x = 1$ $D_f = (1, 0) - \{9\}$

5) $y = \log \frac{(x^2 - 4x + 3)}{x(x-3)}$ $\frac{(x-3)(x-1)}{x(x-3)}$ $D_f = (-\infty, -1) \cup (1, +\infty)$
 6) $y = \log \frac{(x^2 - 4x + 3)}{x(x-3)}$ $\frac{(x-3)(x-1)}{x(x-3)}$ $D_f = (0, 4) - \{1\}$
 7) $y = \log \frac{(x^2 - 4x + 3)}{x(x-3)}$ $\frac{(x-3)(x-1)}{x(x-3)}$ $D_f = (-\infty, -1) \cup (1, +\infty)$

8) $y = \frac{x^2 - 4x + 3}{x(x-3)}$

	-1	0	1	3	4
$x^2 - 4x + 3$	+	+	0	+	+
$x(x-3)$	+	0	-	0	+
$P(x)$	+	-	-	0	+

9) $y = \frac{x^2 - 4x + 3}{x(x-3)}$ $D_f = (-\infty, -1) \cup [1, +\infty)$

10) $y = \sqrt{\frac{x - f(x)}{f(x)}}$ $\frac{x - f(x)}{f(x)}$ $D_f = (-2, -1] \cup (2, 3]$
 $x - f(x) = 0 \rightarrow x = f(x) \rightarrow x = 3, -1$
 $f(x) = 0 \rightarrow x \rightarrow 2, -2$

