تکلیف سوم

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۱- الف) $2x^3 + 3x^2 - 8x + 3 = (x+3)(2x-1)(x-1) \neq 0 \Rightarrow D_f = \mathbb{R} - \{\frac{1}{2}, -3, 1\}$

ب) $2x^3 + 9x^2 + 10x + 3 \neq 0 = (x+1)(x+3)(2x+1) \Rightarrow D_f = \mathbb{R} - \{-1, -3, -\frac{1}{2}\}$

۲- الف) $x^3 - 2x^2 + 2x - 1 \neq 0 \Rightarrow (x-1)(x^2 - x + 1) \Rightarrow D_f = \mathbb{R} - \{1\}$

$\Delta < 0$

ب) $\frac{x+3}{x^3 - 2x^2 + 2x - 1} \geq 0 \Rightarrow \frac{(x+3)}{(x-1)(x^2 - x + 1)} \geq 0 \Rightarrow$

	-3		1	
$+$	ϕ	$-$	ϕ	$+$
ق ق				ق

$\Rightarrow D_f = (-\infty, -3] \cup (1, +\infty)$

۳- الف) $x < 1 \Rightarrow x^2 + 3x = 0 \Rightarrow x(x+3)$ ، 0 ، -3

$x > 1 \Rightarrow x^2 - 7x + 10 = 0 \Rightarrow (x-2)(x-5)$ ، 2 ، 5

$x = 1 \Rightarrow \Delta < 0 \Rightarrow$ غ ق ق

$\Rightarrow D_f = \mathbb{R} - \{-3, 0, 2, 5\}$

ب)

۴- الف) $|2x+1| - |x+3| \neq 0 \Rightarrow 4x^2 + 4x + 1 - (x^2 + 6x + 9) = 3x^2 - 2x - 8$

$(x-2)(3x+4)$

$2 \quad -\frac{4}{3} \Rightarrow D_f = \mathbb{R} - \{2, -\frac{4}{3}\}$

ب) $|2x+1| - |x+3| \geq 0 \Rightarrow 3x^2 - 2x - 8 \geq 0 \Rightarrow (x-2)(3x+4) \geq 0$

	$-\frac{4}{3}$		2	
$+$	ϕ	$-$	ϕ	$+$
ق ق				ق ق

$D_f = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$

۵- الف) $x > 0 \quad 1 - \log_3 x > 0 \Rightarrow 1 > \log_3 x \Rightarrow x < 3 \Rightarrow D_f = (0, 3)$

ب) $x > 0 \quad 1 - \log_{\frac{1}{2}} x > 0 \quad 1 > \log_{\frac{1}{2}} x \quad \frac{1}{2} > x \quad D_{f_x} = (0, \frac{1}{2})$

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

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$x > 0 \quad 2x - 1 > 0 \Rightarrow x > \frac{1}{2} \quad \log_{6}^{2x-1} > 0 \Rightarrow 2x - 1 > 0 \Rightarrow x > \frac{1}{2}$

$D_{f_x} = (\frac{1}{2}, +\infty)$

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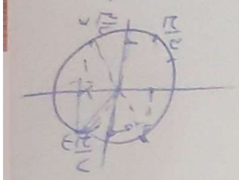
الف) $2\cos x + 1 > 0 \Rightarrow 2\cos x > -1 \Rightarrow \cos x > -\frac{1}{2}$



$(2\pi k - \frac{2\pi}{3}, 2\pi k + \frac{2\pi}{3})$

ب) $\frac{x-1}{x+1} > 0 \quad \log \frac{x-1}{x+1} \geq 0 \quad \frac{x-1}{x+1} \geq 1 \quad D_f = (-\infty, -1) \cup [1, +\infty)$

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$[0, +\infty) \quad 2 - m^2 = 0 \Rightarrow m = \pm\sqrt{2}$

$\Delta \leq 0 \quad 4 - 4(2 - m^2) = 4 - 8 + 4m^2 < 0 \Rightarrow 4m^2 < 4 \Rightarrow m^2 < 1 \Rightarrow -1 < m < 1$

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$4 - x^2 \geq 0 \Rightarrow (2 - x)(2 + x) \geq 0$

$-2 \quad 2$

$- \quad + \quad - \Rightarrow I$

$\{-2, -1\}$

$II \Rightarrow [x] + [-x] + 1 \Rightarrow D_f = R - Z \Rightarrow I \cap II$ ۲ عضو صحیح دارد