

سین فیزیک ام و دفر B تکلیف 4

1- $(a-2)x^2 + ax + b = 0 \Rightarrow a-2=0 \Rightarrow a=2$

$2x + b = 0 \Rightarrow x = -\frac{b}{2} \xrightarrow{\text{مقدار}} -\frac{b}{2} = 2 \Rightarrow b = -4$

2- $f(x) = \sqrt{x^2 + x + 2 - m^2}$ $D_f \subset \mathbb{R} \left\{ \begin{array}{l} \Delta = 0 \\ \Delta < 0 \Rightarrow x > 0 \Rightarrow + \end{array} \right. \left. \begin{array}{l} + \\ 0 \\ + \end{array} \right\} 1 - (-1) = 2$

$\Delta = 0 \Rightarrow 2 + 2m^2 - 4 = 0 \Rightarrow m^2 = 1 \Rightarrow m = \pm 1$

$\Delta < 0 \Rightarrow x > 0 \Rightarrow 2m^2 - 2 < 0 \Rightarrow m^2 < 1 \Rightarrow -1 < m < 1$

3- $f(x) = \frac{\sqrt{2-x^2}}{[x] + [-x] + 1}$ $[x] + [-x] + 1 \neq 0 \Rightarrow [x] + [-x] \neq -1$

$2-x^2 \geq 0 \Rightarrow -2 \leq x \leq 2 \Rightarrow D_f = \{-2, -1, 0, 1, 2\} \Rightarrow$ $x \in \mathbb{Z}$

4- $y = \sqrt{x^3 + 3x^2}$ $x^3 + 3x^2 \geq 0$ $x^2(x+3) \geq 0$ $\frac{-3}{+ \quad 0 \quad +}$ $D_f = [-3, +\infty)$

5- $\frac{\sqrt{(x^2-1)(x^3-3x^2)}}{x^3-1}$ $\frac{x^2(x-1)(x+1)(x-3)}{(x-1)(x^2+x+1)}$ $\frac{-1}{+} \frac{+}{-} \frac{+}{-} \frac{+}{+}$

$D_g = (-\infty, -1] \cup [3, +\infty) \cup \{0\}$

6- $\sqrt{|x-2|-3}$ $|x-2|-3 \geq 0 \Rightarrow |x-2| \geq 3$ $x-2 \geq 3 \Rightarrow x \geq 5$ $x-2 \leq -3 \Rightarrow x \leq -1 \Rightarrow D_f = (-\infty, -1] \cup [5, +\infty)$

7- $\sqrt{2-|x-2|}$ $2-|x-2| \geq 0 \Rightarrow 2 \geq |x-2| \Rightarrow 2-x \leq 2 \Rightarrow -2 \leq x$ $x \geq x-2 \Rightarrow x \leq 4 \Rightarrow D_f = [-2, 4]$

الف) $\sqrt{1-x|x|}$ $1-x|x| \geq 0 \Rightarrow |x| \leq 1 \Rightarrow D_f = [-1, 1]$ -4

ب) $\frac{1}{\sqrt{3-|x-1|-1}}$ $3-|x-1|-1 > 0 \Rightarrow 3 > |x-1| \Rightarrow x-1 < 3 \Rightarrow x < 4$
 $-x+1 < 3 \Rightarrow 1 < x$ } $D_f = (1, 4)$

الف) $\frac{\sin^2 x - 1}{\cos x}$ $\cos x \neq 0 \Rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$ -5

ب) $\frac{\cos x}{r \cos x - 1}$ $r \cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{r}$ $D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$

الف) $|rx+1| - |x+3| \neq 0 \Rightarrow |rx+1| \neq |x+3|$ } $rx+1 \leq x+3 \Rightarrow x \leq r$
 $rx+1 \geq -x-3 \Rightarrow x \geq \frac{-4}{r}$ } $D_f = \mathbb{R} - \{r, \frac{-4}{r}\}$

ب) $|rx+1| - |x+3| \geq 0 \Rightarrow |rx+1| \geq |x+3| \Rightarrow \begin{cases} rx+1 \geq x+3 \\ rx+1 \leq -x-3 \end{cases} \Rightarrow \begin{cases} x \leq r \\ x \leq \frac{-4}{r} \end{cases}$
 $(rx-2)(rx+2) \geq 0 \Rightarrow \frac{-2}{r} \leq x \leq \frac{2}{r} \Rightarrow D_f = (-\infty, \frac{-2}{r}] \cup [\frac{2}{r}, +\infty)$

$rx-1 > 0 \Rightarrow x > \frac{1}{r}$ $\log_{\frac{1}{r}}^{rx-1} > 0$ $\Rightarrow -\log_{\frac{1}{r}}^{rx-1} < 1 \Rightarrow rx-1 < 2 \Rightarrow x < r$ -9
 $rx-1 > 0 \Rightarrow x > \frac{1}{r}$
 $D_f = (\frac{1}{r}, r]$

الف) $r \cos x + 1 \geq 0$ $\cos x \geq -\frac{1}{r}$ $D_f = (k\pi - \frac{\pi}{r}, k\pi + \frac{\pi}{r})$ -10

ب) $\frac{x-1}{x+1} > 0 \Rightarrow \frac{-}{+} \frac{+}{-} \frac{+}{+}$ } $D_f = (-\infty, -1)$