

۲۰. آفرین دلی از هفته‌ی آینده مرتباً وضو بخواند و در غیاب این صورت

۱) $2x^3 - 5x^2 + 3x - 1 = (x-1)(2x^2 + 7x + 3)$ $\frac{1}{2} \rightarrow \frac{1}{2}$
 $D = \mathbb{R} - \left\{ \frac{1}{2}, 1, -3 \right\}$
 $\Rightarrow (x-1)(2x^2 + 7x + 3) = 0$

۲) $D = \mathbb{R} - \left\{ -1, -\frac{1}{2}, -3 \right\}$

۳) $7x^3 - 2x^2 + 2x - 1 = 0 \Rightarrow (x^3 - 1) - 2x(x-1)$
 $(x-1)(x^2 + x + 1) - 2x(x-1) = 0 \Rightarrow (x-1)(x^2 - x + 1)$
 $D = \mathbb{R} - \left\{ 1 \right\}$ $\frac{1}{2} \rightarrow \frac{1}{2}$

۴) $D = \mathbb{R} - \left\{ 0, 1, 3 \right\}$

$(x^2 - 2x + 1) + 4(1 - 5|x - 1|) = 0$
 $(x-1)^2 - 5|x-1| + 4 = 0 \Rightarrow t^2 - 5t + 4 = 0$
 $|x-1| = 1 \Rightarrow x = 2, x = 0$
 $|x-1| = 4 \Rightarrow x = 5, x = -3$

۵) $D = \mathbb{R} - \left\{ -3, 0, 2, 5 \right\}$ ۱) $[-x] - 2 \geq 0$
 $\Rightarrow [-x] \geq 2$
 $\Rightarrow -x \geq 2 \Rightarrow x \leq -2$ $D = \left\{ -\infty, -2 \right\}$

۲) $[x]^2 - 2[x] - 3 = 0 \Rightarrow ([x] - 3)([x] + 1) = 0$

۳) $D = \mathbb{R} - ([-1, 0) \cup [3, 4])$

۴) $\left[x - \frac{1}{3}\right] + \left[x - \frac{1}{3}\right] + 1 \geq 0 \Rightarrow 2\left[x - \frac{1}{3}\right] + 1 \geq 0$
 $\Rightarrow \left[x - \frac{1}{3}\right] \geq -\frac{1}{2} \Rightarrow x - \frac{1}{3} \geq -\frac{1}{2}$

$D = \left[\frac{1}{6}, \infty\right)$ $\frac{1}{2} \rightarrow \frac{1}{2}$

۵) $\forall x \quad x = \frac{1}{2} + k, k \in \mathbb{Z} \Rightarrow [x] + [-x] \geq 0$

$$w) \pi \neq \pi \quad \pi \neq \pi \rightarrow \frac{\pi}{2}$$

$$\Rightarrow \pi = \frac{\pi}{2}$$

$$D = \left\{ \frac{\pi}{2}, \frac{\pi}{4} \right\} \quad \text{Don't } \pi - 1 \Rightarrow \pi - \frac{\pi}{4}$$

$$\sin^2 x \leq \frac{1}{4} \Rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2}$$

$$w) \sin x > \frac{1}{2} \Rightarrow D = \left[2\pi + \frac{\pi}{6}, 2\pi + \frac{5\pi}{6} \right]$$

$$\therefore \cos x < \frac{1}{2}$$

$$D = \left[2\pi + \frac{\pi}{3}, 2\pi + \frac{5\pi}{3} \right]$$

$$D = \{ x^2 - 3x + 1 \leq 1 \} \Rightarrow \left[-1, 2 \right] \cup \left[-1, 0 \right]$$

$$\left[-1, 2 \right] \cup \left[-1, 0 \right]$$

$$D = \left[2, \frac{5}{2} \right] \Rightarrow x \leq \frac{5}{2}$$

$$w) 0 < x < 1 - \log_3 x > 0 \Rightarrow \log_3 x < 1 \Rightarrow x < 3$$

$$D = \left(0, 3 \right) \Rightarrow x > 0$$

$$\Rightarrow x > \left(\frac{1}{3} \right) \Rightarrow x > \frac{1}{2}$$

$$w) 4x - x^2 \geq 0 \Rightarrow 4x - x^2 \geq 8 \Rightarrow 2x^2 \geq 2 \Rightarrow x^2 \geq 1 \Rightarrow x \leq -1 \text{ or } x \geq 1$$

$$D = \left[-1, 1 \right]$$

$$\Rightarrow 2x + 4 \geq 0 \Rightarrow x \geq -2$$

$$x = \frac{4x-5}{3-2x} \Rightarrow D = \left\{ x \in \mathbb{R} \mid x \neq \frac{5}{2} \right\}$$