

الف) $(x-1)(2x^2+5x-3) \neq 0$

$x^2+5x-4=0 \xrightarrow{\text{لـ}} (x+4)(x-1) \xrightarrow{\text{لـ}} x \leq \frac{1}{2}$
 $x = -\frac{4}{2} = -2$

$P_f = \mathbb{R} - \{-2, \frac{1}{2}, 1\}$

ب) $(x+1)(2x^2+7x+3) \neq 0 \xrightarrow{\text{لـ}} (x+\frac{1}{2})(x+3)$

$P_f = \mathbb{R} - \{-3, -1, -\frac{1}{2}\}$

الف) $(x-1)(x^2-x+1)$
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$P_f = \mathbb{R} - \{1\}$

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

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

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

$x < 1 \Rightarrow x^2+5x-5-2x+5 = x^2+3x = x(x+3) \leq 0$

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

الف) $[-x]-2 \geq 0 \quad [-x] \geq 2 \quad P_f = (-\infty, -2]$

ب) $t^2-2t-3 \neq 0 \xrightarrow{[x]=t} (t-3)(t+1) \neq 0 \xrightarrow{\text{لـ}} t \neq -1$

$[x]=t \Rightarrow [x]=3 \quad x \in [3, 4) \Rightarrow P_f = [-1, 0) \cup [3, 4)$
 $[x]=-1 \Rightarrow [-1, 0) \Rightarrow P_f = [-1, 0) \cup [3, 4)$

سوال ۱۵

$$\text{الف) } \left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0 \rightarrow \left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] - 1 \geq -1$$

$$\underbrace{\left[x - \frac{1}{3}\right] + \left[x - \frac{1}{3}\right]}_{2\left[x - \frac{1}{3}\right]} \geq -1 \Rightarrow D_f = \left[\frac{1}{3}, +\infty\right)$$

$$\text{ب) } \left[x - \frac{1}{3}\right] = t \quad [t] - [-t]$$

اگر عدد صحیح باشد عبارت برابر صفر است. و اگر برابر (-1) باشد که مستویات دایره را در دو نقطه قابل قبول است

$$x - \frac{1}{3} \in \mathbb{Z} \quad D_f = \left\{x = h + \frac{1}{3} / h \in \mathbb{Z}\right\}$$

سوال ۱۶

$$\text{الف) } \sin x \neq 0 \quad \tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \quad x \neq k\pi + \frac{\pi}{4} + \frac{\pi}{2}$$

$$\cos x \neq 0 \Rightarrow x \neq k\pi + \frac{\pi}{2}$$

$$D_f = \mathbb{R} - \left\{k\pi, k\pi + \frac{\pi}{4} + \frac{\pi}{2}, k\pi + \frac{\pi}{2}\right\}$$

$$\text{ب) } 1 - 2\sin^2 x \geq 0 \quad (1 - 2\sin x)(1 + 2\sin x) \geq 0$$

$$-\frac{1}{2} \leq \sin x \leq \frac{1}{2}$$

$$D_f = \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}\right]$$

سوال ۱۷

$$\text{الف) } 2\sin x - 1 \geq 0 \quad 2\sin x \geq 1 \quad \sin x \geq \frac{1}{2} \quad D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\right]$$

$$\text{ب) } 1 - 2\cos x \geq 0 \quad 2\cos x \leq 1 \quad \cos x \leq \frac{1}{2}$$

$$D_f = \left[2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\right]$$

سؤال 18

الف) $x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \quad [-3, 0]$

$x^2 + 3x + 1 \geq -1 \rightarrow x^2 + 3x + 1 \geq -1 \rightarrow x^2 + 3x + 2 \geq 0$

$(-\infty, -2] \cup [-1, +\infty)$ $\because (x+1)(x+2) \geq 0 \rightarrow \frac{-x-1}{+1-1+}$

$D_f = [-3, -2] \cup [-1, 0]$

ب) $0 \leq \sqrt{5-2x} \leq 1 \rightarrow 0 \leq 5-2x \leq 1 \quad -5 \leq -2x \leq -4$

مترين

$5 \geq 2x \geq 4 \quad D_f = [2, 2.5]$
 $2.5 \geq 2$

سؤال 19

الف) ① $\log_x x \quad x > 0$

② $1 - \log_x x > 0 \quad \log_x x < 1 \quad x^{23} \} D_f = (0, 3)$

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

$\log_{\frac{1}{x}} x < 1 \quad x < \frac{1}{x}$

سؤال 10

الف) $2^{x-x^2} - 1 \geq 0 \quad 2^{x-x^2} \geq 1 \quad 2^{x-x^2} \geq 2^0 \quad x-x^2 \geq 0$

$-x^2 + x - 0 \geq 0 \quad x^2 - x \leq 0 \quad (x-1)(x-0) \leq 0$

$D_f = [0, 1]$

ب) $\frac{3x+5}{x+2} = n \quad 3x+5 = (x+2)n \quad 3x - 2nx = 2n - 5$

$x(3-2n) = 2n-5$

$x = \frac{2n-5}{3-2n}$

$D_f = \left\{ \frac{2n-5}{3-2n} \mid n \in \mathbb{N} \right\}$