

منهج هينرش اس $x^4 + 13x^2 + 36 = (x^2 + 4)(x^2 + 9)$ (الف)

$$x = \frac{1 \pm \sqrt{1+24}}{2} = \frac{1 \pm 5}{2} \Rightarrow x = 3 \quad x = -2$$

$$\begin{array}{cc} -2 & 3 \\ + & - & + \\ + & - & + \end{array}$$

$$D_F = (-\infty, -2] \cup [3, \infty)$$

ب) $x \in (-\infty, -2] \cup [-2, 1] \cup [3, \infty) \rightarrow$ بحر نقاي ك
 $x^3 - 2x^2 - 5x - 6 = 0$ صفر كوا

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

ب) $n^2 - 2n - 3 = (n-3)(n+1) \Rightarrow n = 3, n = -1$

$[x] = 3 \Rightarrow 3 \leq x < 4 \quad [x] = -1 \Rightarrow -1 < x < 0$

$$D_F = (-\infty, -1) \cup [0, 3) \cup [4, \infty)$$

(الف) $k \in \mathbb{Z}, \sin x \neq 0 \Rightarrow x \neq k\pi \Rightarrow k \in \mathbb{Z}, x \neq \frac{k\pi}{2}$
 $\cos x \neq 0 \Rightarrow x \neq \frac{\pi}{2} + k\pi$

$$D_F = \mathbb{R} - \left\{ \frac{k\pi}{2} \mid k \in \mathbb{Z} \right\}$$

ب) $1 - 4 \sin^2 x \geq 0 \Rightarrow 4 \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{4} \Rightarrow |\sin x| \leq \frac{1}{2}$

$$D_F = \left[2k\pi, 2k\pi + \frac{\pi}{6} \right] \cup \left[2k\pi + \frac{5\pi}{6}, 2k\pi + \frac{7\pi}{6} \right] \cup \left[2k\pi + \frac{11\pi}{6}, 2k\pi + 2\pi \right]$$

(الف) $1 - \log_{\frac{1}{2}} x \geq 0 \rightarrow 1 \leq \log_{\frac{1}{2}} x \rightarrow x - 1 \leq 1/2 \rightarrow x \leq 3/2$

$$x - 1 > 0 \rightarrow x > 1$$

$$D_F = (1, 3/2]$$

ب) $1 \neq \log_4 x^2 - 3x \quad 4 = x^2 - 3x$

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

$$x^2 - 3x > 0 \rightarrow x(x-3) > 0 \rightarrow x < 0 \text{ or } x > 3$$

$x^2 - x \geq 0 \Rightarrow x(x-1) \geq 0 \rightarrow x \leq 0 \text{ or } x \geq 1$ $D_F = (-\infty, 0] \cup (3, \infty)$

(الف) $2^{4x-x^2} - 8 > 0 \rightarrow 2^{4x-x^2} > 8 \rightarrow 2^{4x-x^2} > 2^3 \rightarrow 4x - x^2 > 3 \rightarrow (x-3)(x-1)$

$$D_F = [1, 3] \leftarrow \begin{array}{cc} 1 & 3 \\ + & - & + \\ + & - & + \end{array}$$

ب) $\frac{3x+5}{2x+4} \in \mathbb{N} \quad 3x+5 = 2xw + 4w$

$$3x + 2xw = 4w - 5 \rightarrow x(3 + 2w) = 4w - 5$$

$$\rightarrow x = \frac{4w-5}{3+2w}$$

$$D = \left\{ x \mid x = \frac{4k-5}{3-2k}, k \in \mathbb{N} \right\}$$