

الف) $y = \frac{x+3}{2x^3+3x^2-8x+3} \rightarrow$ مخرج نباید صفر شود

ب) $y = \frac{x+3}{2x^3+9x^2+10x+3} \rightarrow$ مخرج نباید صفر باشد

الف) $D_f: \mathbb{R} - \{1, \frac{1}{2}, -3\}$

ب) $D_f: \mathbb{R} - \{1, -3, -\frac{1}{2}\}$

الف) $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-\omega \pm \sqrt{\omega^2 - 4}}{2} \Rightarrow \frac{1}{2}, -3$

ب) $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{1-4}}{2} = \frac{-1 \pm i\sqrt{3}}{2}$

الف) $y = \frac{x+3}{x^3-2x^2+2x-1} \rightarrow$ مخرج نباید صفر باشد

ب) $y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \rightarrow$ عبارت باید مساوی یا بزرگتر صفر باشد

الف) $D_f: \mathbb{R} - \{1\}$

ب) $D_f: (-\infty, -3] \cup (1, +\infty)$

$x^2 - \omega(x-1) - 2x + \omega \rightarrow x \geq 1 \rightarrow x^2 - \omega x + \omega - 2x + \omega \rightarrow x^2 - (2+\omega)x + 2\omega = 0$

$x = 2, \omega \leftarrow (x-2)(x-\omega) = 0$

$x \leq 1 \rightarrow x^2 - \omega x - \omega - 2x + \omega = 0 \rightarrow x^2 - 2x = 0$

$x = 0, (x-2) \leftarrow x(x-2) = 0$

$D_f: \mathbb{R} - \{2, \omega, 0, -3\}$

الف) $y = \sqrt{[x]-2} \rightarrow [x]-2 \geq 0 \rightarrow [x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2$

$D_f: (-\infty, -2]$

ب) $y = \frac{\omega x^2 + 4}{[x]^2 - 2[x] - 3} \rightarrow [x]^2 - 2[x] - 3 \rightarrow a+c=b \rightarrow x=-1, \frac{c}{a} \rightarrow [x] = -1 \rightarrow -1 \leq x < 0$

$[x] = 2 \rightarrow +3 \leq x < 4$

$D_f: (-\infty, -1) \cup [0, 3) \cup [4, +\infty)$

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

$x + \frac{2}{3} \geq 1 \rightarrow x \geq \frac{1}{3} \rightarrow D_f: [\frac{1}{3}, +\infty)$

ب) $\sqrt{[x-\frac{1}{3}]} + [\frac{1}{3}-x] \rightarrow$ ~~.....~~ $x - \frac{1}{3} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{3}$

$D_f: \{x | x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

گراف: $[x] \cdot [-x] \rightarrow$

الف) $\frac{\cot x + 1}{\tan x + 1} \rightarrow \cot$ نه $2k\pi + \pi$ و $2k\pi$ تعريف مني مقرر $\tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow x \neq k\pi - \frac{\pi}{4}$ $\tan$ نه $k\pi, \frac{\pi}{4}$ تعريف مني مقرر $D_f: \mathbb{R} - \{ \frac{k\pi}{4}, k\pi - \frac{\pi}{4} \}$ ب) $\sqrt{1 - 2\sin^2 x} \rightarrow 1 - 2\sin^2 x \geq 0 \rightarrow 1 \geq 2\sin^2 x \rightarrow \frac{1}{2} \geq \sin^2 x \rightarrow \frac{1}{\sqrt{2}} \geq \sin x \geq -\frac{1}{\sqrt{2}}$ $D_f: [k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}]$	6
الف) $\sqrt{2\sin x - 1} \rightarrow 2\sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{2} \rightarrow D_f: [2k\pi - \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$ ب) $\sqrt{1 - 2\cos x} \rightarrow 1 - 2\cos x \geq 0 \rightarrow 1 \geq 2\cos x \rightarrow \frac{1}{2} \geq \cos x \rightarrow D_f: \mathbb{R} - (2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3})$	7
الف) $\arcsin(x + \frac{3}{4}) \rightarrow -1 \leq x + \frac{3}{4} \leq 1 \xrightarrow{+\frac{3}{4}} \frac{1}{4} \leq (x + \frac{3}{4}) \leq \frac{7}{4}$ $\frac{1}{4} \leq x + \frac{3}{4} \leq \frac{7}{4} \rightarrow -1 \leq x \leq 1$ $-\frac{1}{4} \geq x + \frac{3}{4} \geq -\frac{7}{4} \rightarrow -2 \geq x \geq -2$ ب) $\cos y = \sqrt{\omega - 2x} \rightarrow -1 \leq \sqrt{\omega - 2x} \leq 1 \rightarrow \sqrt{\omega - 2x} \leq 1 \rightarrow \omega - 2x \leq 1 \rightarrow 2 \leq 2x \rightarrow x \geq 1$ $\omega - 2x \geq 0 \rightarrow \omega \geq 2x \rightarrow 2\omega \geq x$ $D_f: [2, \omega]$	8
الف) $y = \log_2(1 - \log_3^n)$ ① $x > 0$ ② $1 - \log_3^n > 0 \rightarrow 1 > \log_3^n \rightarrow 3 > n$ $D_f: (0, 3)$ ب) $\log_2(1 - \log_3 \frac{1}{x})$ ① $x > 0$ ② $1 - \log_3 \frac{1}{x} > 0 \rightarrow 1 > \log_3 \frac{1}{x} \rightarrow \frac{1}{x} < 3 \rightarrow x > \frac{1}{3}$ $D_f: (\frac{1}{3}, +\infty)$	9
الف) $\sqrt{\frac{2^{x-n} - 1}{3} - 1} \rightarrow \frac{2^{x-n} - 1}{3} - 1 \geq 0 \rightarrow \frac{2^{x-n} - 1}{3} \geq 1 \rightarrow 2^{x-n} - 1 \geq 3 \rightarrow 2^{x-n} \geq 4 \rightarrow x - n \geq 2 \rightarrow x \geq n + 2$ $\frac{1}{x} - \frac{1}{n} \geq 0 \rightarrow \frac{1}{x} \geq \frac{1}{n} \rightarrow x \leq n$ $D_f: [1, 3]$ ب) $y = \left(\frac{3^{x+\omega}}{2^{x+2}} \right)!$ $\frac{3^{x+\omega}}{2^{x+2}} \in \mathbb{N} \rightarrow 3^{x+\omega} \in 2^{x+2} \cdot \mathbb{N} \rightarrow 3^{x+\omega} \in 2^x \cdot \mathbb{N}$ $x \in \frac{2^x \cdot \mathbb{N} - \omega}{3 - 2^x \cdot \mathbb{N}} \rightarrow D_f: \{x x = \frac{2^k - \omega}{3 - 2^k}, k \in \mathbb{N}\}$	10