

دفعه آخر

بنام خدا



الف) $y = \frac{\sin x - 2}{2 \cos x + 1} \neq 0 \rightarrow \cos x \neq -\frac{1}{2} \rightarrow D_f = R - \{2k\pi \pm \frac{2\pi}{3}\}$ (1)

ب) $\frac{\sin x + 2}{\cos x - 1} \neq 0 \rightarrow \cos x \neq 1 \rightarrow \neq 2k\pi \rightarrow D_f = R - \{2k\pi\}$ (2)

الف) $y = \frac{2 \sin x + 1}{\tan x + 1} \rightarrow \tan x \neq -1 \rightarrow x \neq \frac{3\pi}{4}, \frac{7\pi}{4}$
 $\rightarrow \cos x \neq 0 \rightarrow D_f = R - \{k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2}\}$ (3)

ب) $\frac{\cos x + 1}{\cot x - 1} \rightarrow \cot x \neq 1 \rightarrow x \neq \frac{\pi}{4}, \frac{5\pi}{4}$
 $\rightarrow \sin x \neq 0 \rightarrow x \neq k\pi$

$D_f = R - \{k\pi, k\pi + \frac{\pi}{4}\}$ (4)

الف) $\sin y = x^2 - 2 \rightarrow -1 \leq x^2 - 2 \leq 1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow 1 \leq x \leq \sqrt{3}$
 $D_f = [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$ (5)

ب) $y = \arccos(\sqrt{x} - 3) \rightarrow -1 \leq \sqrt{x} - 3 \leq 1 \rightarrow 2 \leq \sqrt{x} \leq 4 \rightarrow 4 \leq x \leq 16 \rightarrow D_f = [4, 16]$ (6)

الف) $\cos y = |x| - 3 \rightarrow -1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4$
 $\rightarrow 2 \leq x \leq 4 \text{ or } -4 \leq x \leq -2 \rightarrow D_f = [2, 4] \cup [-4, -2]$ (7)

ب) $y = \arcsin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1 \rightarrow x(x+3) \leq 0$
 $(x+1)/(x+2) \geq 0$
 $D_f = [-3, -2] \cup [-1, 0]$

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درس اللوغاريتم

Subject:

الف) $y = \log_r x^{r-1} > 0 \Rightarrow x^{r-1} > 1 \Rightarrow x > 1 \text{ و } x < -1$
 $\Rightarrow D_f = (1, +\infty) \cup (-\infty, -1)$ -٥

ب) $y = \log_r r - |x| > 0 \Rightarrow |x| < r \Rightarrow -r < x < r$
 $D_f = (-r, r)$ ٥ ✓

الف) $y = \log \frac{\omega - x}{x - r} > 0$ و $x - r \neq 0 \Rightarrow \begin{cases} x < \omega & x \neq r \\ x > r \end{cases}$
 $D_f = (r, \omega) - \{r\}$ -٩

ب) $y = \log \frac{x^2 - 1}{x + r} > 0$ و $x + r \neq 0 \Rightarrow \begin{cases} x^2 > 1 \Rightarrow x > 1 \text{ و } x < -1 \\ x > -r \end{cases}$
 $\Rightarrow D_f = (-r, -1) \cup (1, +\infty) - \{-r\}$ ٢ ✓

الف) $y = \log \frac{x^2 - rx + r}{x - r} > 0 \Rightarrow \frac{(x-r)(x-1)}{x-r} > 0 \Rightarrow x > 1$
 $D_f = (1, +\infty) - \{r\}$ -٧

ب) $y = \log \frac{x+r}{x-r} > 0 \Rightarrow \frac{x+r}{x-r} > 0 \Rightarrow \begin{matrix} -r & r \\ + & - & + \\ \hline & 0 & 0 \end{matrix} \Rightarrow (r, +\infty) \cup (-\infty, -r)$
 $x + \omega \neq 0$ و $x + \omega > 0 \Rightarrow x > -\omega$
 $\downarrow$
 $[x \neq -r] \cap \Rightarrow D_f = (-\omega, r) \cup (r, +\infty) - \{r\}$ ٢ ✓

الف) $y = \sqrt{r} - \log_r \frac{x-r}{r} > 0 \Rightarrow \log_r \frac{x-r}{r} < \sqrt{r}$
 $\log_r \frac{x-r}{r} < \sqrt{r} \Rightarrow \frac{x-r}{r} < r^{\sqrt{r}} \Rightarrow x < 1 + r^{\sqrt{r}}$
 $\cap \Rightarrow D_f = (r, 1 + r^{\sqrt{r}}]$ -٨

ب) $y = \log (r \log_r x - 1) > 0 \Rightarrow r \log_r x - 1 > 0 \Rightarrow x \log_r x > 1$
 $D_f = (\sqrt{r}, +\infty)$ ٢ ✓

Date: / /

سوال

Subject:

الف) $y = \frac{x}{x+1} \rightarrow x+1 \neq 0 \rightarrow x \neq -1 \rightarrow \text{مماثل لـ } D_f = \mathbb{R} \setminus \{-1\}$ (9)

ب) $y = \frac{x}{x^2-1} \rightarrow x^2-1 \neq 0 \rightarrow x^2 \neq 1 \rightarrow x \neq \pm \log_f 1 \rightarrow D_f = \mathbb{R} - \{\log_f 1\}$ (2) ✓

ج) $y = \frac{x}{x^2-2} \rightarrow x^2-2 \neq 0 \rightarrow x^2 \neq 2 \rightarrow x \neq \pm \log_f 2 \rightarrow D_f = \mathbb{R} - \{\log_f 2\}$

د) $y = \frac{x}{x^2-3} \rightarrow x^2-3 \neq 0 \rightarrow x^2 \neq 3 \rightarrow x \neq \pm \log_f 3 \rightarrow D_f = \mathbb{R} - \{\log_f 3\}$

الف) $y = (x+1)! \rightarrow x+1 \in \mathbb{N} \rightarrow x \in \mathbb{N} - 1$ (1)
 $D_f = \{x \mid x = \frac{k-1}{f}, k \in \mathbb{N}\}$

ب) $y = \left(\frac{x^2-1}{x^2-2} \right)! \rightarrow \frac{x^2-1}{x^2-2} \in \mathbb{N} \rightarrow x^2-1 \in x^2\mathbb{N} - 2\mathbb{N}$ (2) ✓

$\rightarrow x^2 - 2xw \in -2w + 1 \rightarrow x(x - 2w) \in -2w + 1 \rightarrow x \in \frac{-2w + 1}{x - 2w} \rightarrow D_f = \{x \mid x = \frac{-2k + 1}{x - 2k}, x \in \mathbb{N}\}$