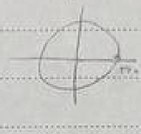
Year: Month: Date: ( ) Subject: [illegible]

$y = \dfrac{\sin x - 2}{2\cos x + 1}$ $\quad 2\cos x + 1 \neq 0$, $\quad 2\cos x \neq -1$, $\quad \cos x \neq -\frac{1}{2}$  $D_f = R - \{2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\}$ 1.

$y = \dfrac{\sin x + 3}{\cos x - 1}$ $\quad \cos x - 1 \neq 0$, $\quad \cos x \neq 1$  $D_f = R - \{2k\pi\}$

$y = \dfrac{2\sin x + 1}{\tan x + 1}$ $\quad \tan x + 1 \neq 0$, $\quad \tan x \neq -1$ / $\tan = \frac{\sin}{\cos} \to \cos \neq 0$ $\to \begin{cases} \tan x \neq -1 \to x \neq k\pi - \frac{\pi}{4} \\ \cos x \neq 0 \to x \neq k\pi + \frac{\pi}{2} \end{cases} \Rightarrow D_f = R - \{k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{2}\}$ −2

$y = \dfrac{\cos x + 1}{\cot x - 1}$ $\quad \cot x - 1 \neq 0$, $\quad \cot x \neq 1$ / $\cot = \frac{\cos}{\sin}$, $\sin x \neq 0$ $\begin{cases} \cot x \neq 1 \to x \neq k\pi + \frac{\pi}{4} \\ \sin x \neq 0 \to x \neq k\pi \end{cases} \Rightarrow D_f = R - \{k\pi + \frac{\pi}{4}, k\pi\}$

−3

$\sin y = x^2 - 2 \to -1 \le x^2 - 2 \le 1 \to 1 \le x^2 \le 3 \to 1 \le x \le 9 \to D_f = [1,9]$

$y = \arccos(\sqrt{x} - 3) \to -1 \le \sqrt{x} - 3 \le 1 \to 2 \le \sqrt{x} \le 4 \to 4 \le x \le 16 \quad D_f = [4,16]$ $\quad x \ge 0 \; A$, $\quad A \cap B$

−4

$\cos y = |x| - 3 \to -1 \le |x| - 3 \le 1 \to 2 \le |x| \le 4 \to D_f = [\pm 2, \pm 4]$

$-3 \quad 0$; $+ \; - \; +$; $x = 0 \quad x = -3$

$y = \arcsin(x^2 + 3x + 1) \to -1 \le x^2 + 3x + 1 \le 1$

$\to x^2 + 3x + 1 \le 1 \to x^2 + 3x \le 0 \to x(x+3) \le 0$

$\to x^2 + 3x + 1 \ge -1 \to x^2 + 3x + 2 \ge 0 \to (x+1)(x+2) \ge 0$

$x = -1 \quad x = -2$

$D_f = [-3, 0] \cup (-\infty, -2] \cup [-1, +\infty)$ $\quad -2 \quad -1$; $+ \; - \; +$ −5

$y = \log_2^{x^2 - 4} \to x^2 - 4 > 0 \to x^2 > 4 \to x > 2$, $x < -2$ $\quad D_f = (-\infty, -2) \cup (2, +\infty)$

$y = \log_2^{2 - |x|} \to 2 - |x| > 0 \quad 2 > |x| \to -2 < x < 2$ $\quad D_f = (-2, 2)$ $\quad -2 \quad 2$; $- \; + \; -$

−6

$y = \log_{x-3}^{5-x} \to 5 - x > 0 \quad 5 > x$; $\quad x - 3 > 0 \quad x > 3$ $\to D_f = (3, 5)$ $\quad 3 \quad 5$; $- \; + \; -$

$y = \log_{x+3}^{x^2 - 1}$ $\quad x^2 - 1 > 0 \quad x^2 > 1 \to x > 1$, $x < -1$; $\quad x + 3 > 0 \quad x > -3$ $\quad D_f = (-3, -1) \cup (1, +\infty) - \{2\}$ $\quad 1 \quad -1 \quad 1$; $- \; + \; - \; +$

$x + 3 \neq 1$

$x \neq -2$

$$\begin{array}{l|l} x^2-4x+3 & x-1 \\ \hline -x^2+x & x-3 \\ -3x+3 & \\ +3x-3 & \\ 0 & \end{array}$$

$\frac{x^2}{x} = x(x-1) = x^2-x$

$\frac{-3x}{x} = -3(x-1) = -3x+3$

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$y = \log \frac{x^2-4x+3}{x-3}$ $\quad \frac{x-3}{x-3} = 1 \quad D_f = [1]$ -7

$y = \log_{\frac{x+3}{x-1}} (x+5)$ $\quad \frac{x+3}{x-1} > 0 \quad x+3>0 \quad x>-3$

$x+5 \neq 1 \quad x+5>0$

$x \neq -4 \quad x>-5$

$D_f = (-3, +\infty)$ -8

$y = \sqrt{3 - \log_2 (x-2)}$ $\quad \begin{cases} x-2>0 \to x>2 \\ 3-\log_2 (x-2) \geq 0 \to \log_2^{x-2} \leq 3 \to x-2 \leq 8 \to x \leq 10 \end{cases} \quad D_f = (2, 10]$

$y = \log (2 \log_3 x - 1) \to 2\log_3 x - 1 > 0 \to \log_3 x > +\frac{1}{2}$ $\quad x>1.73 \to D_f = (1.73, +\infty)$ -9

$x>0$, 1.73

$y = \frac{3}{4^x+1}$ $\quad 4^x+1 \neq 0$, $4^x \neq -1$ $\quad D_f = \mathbb{R}$

$y = \frac{3}{4^x-1}$ $\quad 4^x-1 \neq 0$, $4^x \neq 1 \to x \neq 0$ $\quad D_f = \mathbb{R} - \{0\}$

$y = \frac{3}{4^x-2}$ $\quad 4^x-2 \neq 0$, $4^x \neq 2$ $\quad x \neq \log_4^2 \to D_f = \mathbb{R} - \{\log_4^2\}$

$y = \frac{3}{4^x-3}$ $\quad 4^x-3 \neq 0$, $4^x \neq 3$ $\quad x \neq \log_4^3 \to D_f = \mathbb{R} - \{\log_4^3\}$

-10

$y = (4x+1)!$ $\quad 4x+1 \in W \to 4x \in W-1 \to x \in \frac{W-1}{4} \to D_f = \{x \mid x = \frac{k-1}{4}, k \in W\}$

$y = \left(\frac{3x-2}{2x-5}\right)!$ $\quad \frac{3x-2}{2x-5} \in W \to 3x-2 = 2xW - 5W \Rightarrow 3x - 2xW = 2 - 5W$

$x = \frac{2-5W}{3-2W}$ $\quad D_f = \{x \mid x = \frac{2-5k}{3-2k}, k \in W\}$