Year: Month: Date: ( ) Subject:

1)

$y=\sqrt{4-\sqrt{2-x}}$ $\begin{cases} 2-x \geq 0 \to x \leq 2 \\ 4-\sqrt{2-x} \geq 0 \to \end{cases}$ $\cap\ D_f=[2,6]$

$4^2-2-x \geq \to 4-x \leq 2$

$x \geq 6$

$y=\sqrt{3-\sqrt{x-2}}$ $\begin{cases} x-2 \geq 0 \to x \geq 2 \\ 3-\sqrt{x-2} \geq 0 \end{cases}$

$D_f=[2,5]$

$3-x-2 \geq 0$

$x-2 \leq 3$

$x \leq 5$

2)

$y=\sqrt{4-2x^2} \to 4-2x^2 \geq 0$

$2x^2 \leq 4$

$\sqrt{x^2} \leq 2$

$x \leq \sqrt{2}$

$D_f=(-\infty,\sqrt{2}]$

$y=\sqrt{3|x|-9} \to 3|x|-9 \geq 0$

$3|x| \geq 9$

$|x| \geq 3 \begin{cases} x>3 \\ x<-3 \end{cases}$

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

3)

$y=\sqrt[3]{\frac{|x|+1}{|x|-3}}$ $|x|-3 \neq 0$

$|x| \neq 3$

$D_f=\mathbb{R}-\{\pm 3\}$

$y=\sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x}-3 \neq 0$

$\sqrt{x} \neq 3$

$D_f=\mathbb{R}-\{9\}$

4)

$y=\frac{\sqrt{3-|x|}}{|x|+2}$ $\begin{cases} 3-|x| \geq 0 \to |x| \leq 3 \ \{-3 \leq x \leq 3 \\ |x|+2 \neq 0 \end{cases}$

$|x| \neq -2$

$\cap\ D_f=[-3,3]$

$D_f=(-\infty,2]$

$y=\frac{\sqrt{4-x^2}}{|x|-1}$ $\begin{cases} 4-x^2 \geq 0 \to x^2 \leq 4 \to x \leq 2 \\ |x|-1 \neq 0 \quad |x| \neq 1 \end{cases}$ $\cap\ D_f=(-\infty,2]$

$x \neq \pm 1$

$D_f=\mathbb{R}-\{\pm 1\}$

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$y = \frac{x+1}{\sqrt{x+|x|}}$ $\quad x+|x|>0$ -۵

$|x| > -x \quad D_f = \mathbb{R}$

$y = \frac{1}{\sqrt{x|x|}}$ $\quad x|x|>0 \quad D_f = \mathbb{R}^+$

-۶

$y = \sqrt{۲-[x]}$ $\quad ۲-[x] \geq 0$

$[x] \leq ۲ \longrightarrow x < ۳ \longrightarrow D_f = (-\infty , ۳)$

$y = \frac{1}{\sqrt{۲-[x]}}$ $\quad ۲-[x] > 0$

$[x] < ۲ \rightarrow x < ۲ \rightarrow D_f = (-\infty , ۲)$

$y = \frac{1}{x[x]}$ $\quad x[x] \neq 0 \quad D_f = \mathbb{R} - \{0\}$ -۷

$y = \frac{1}{\sqrt{-x[x]}}$ $\quad -x[x] > 0 \longrightarrow x[x] < 0 \quad D_f = \varnothing$

$y = \sqrt{[x-\frac{1}{۴}] + [x+\frac{۳}{۴}]}$ $\quad [x-\frac{1}{۴}] + [x+\frac{۳}{۴}] \geq 0 \longrightarrow$ -۸

$1 + [x - \frac{1}{۴} + [x + \frac{۳}{۴} \geq 1$

$[x - \frac{1}{۴} + 1] + [x + \frac{۳}{۴}] \geq 1$

$[x + \frac{۳}{۴}] + [x + \frac{۳}{۴}] \geq 1$

$۲[x + \frac{۳}{۴}] \geq 1$

$[x + \frac{۳}{۴}] \geq \frac{1}{۲}$

$x + \frac{۳}{۴} \geq 1$

$x \geq \frac{۳}{۴} - 1$

$x \geq -\frac{1}{۴} \quad D_f = [-\frac{1}{۴} , +\infty)$

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$y=\sqrt{[\underbrace{x-\frac{1}{۲}}_{a}]+[\underbrace{-x+\frac{1}{۲}}_{-a}]}$ $a\in Z$ $[a]+[-a]=0$

$a\notin Z$ $[a]+[-a]=-1$ $\Rightarrow x-\frac{1}{۲}\in Z$

$D_f=\{x \mid x=k+\frac{1}{۲},\ k\in Z\}$

-9

$y=\frac{1}{۲\sin^۲x-1}$ $۲\sin^۲x-1\neq 0$

$۲\sin^۲x\neq 1$ $D_f=\mathbb{R}$

$\sin^۲x\neq\frac{1}{۲}$

$\sin x\neq\sqrt{\frac{1}{۲}}$

$y=\frac{\cot x+1}{\tan x+1}\rightarrow \tan x+1\neq 0$

$\tan\neq 1$

$\tan=\frac{\sin}{\cos}$

$\begin{cases}\tan\neq 1 & D_f=R-\{k\pi+\frac{\pi}{۴}\}\\ \cos\neq 0 \rightarrow & D_f=R-\{k\pi+\frac{\pi}{۲}\}\end{cases}$

-10

$y=\sqrt{۲\sin-1}$ $۲\sin-1\geqslant 0$

$۲\sin\geqslant 1$ $D_f=R-\{۲k\pi+\frac{\pi}{۶},\ ۲k\pi+\frac{۵\pi}{۶}\}$

$\sin\geqslant\frac{1}{۲}$

$y=\sqrt{1-۲\cos x}$ $1-۲\cos x\geqslant 0$

$۲\cos\leqslant 1$ $D_f=R-\{k\pi+\frac{\pi}{۳}\}$

$\cos\leqslant\frac{1}{۲}$