KEY

Math 125-Quiz 1
September 5, 2011

You have ten minutes to complete this quiz. No Calculators.

1. What is the domain of $f(x) = \sqrt{1-x}$?

$1-x \geq 0 \Rightarrow x \leq 1$

2. What is the domain of $f(x) = \frac{2x}{x^2+1}$?

only if $x^2+1=0$ do we have a problem, but

that gives $x^2 = -1$ and $x = \pm\sqrt{-1}$, impossible, so

$x \in \mathbb{R}$ (all reals) for our domain

3. Let $f(x) = \frac{1}{x+3}$. Compute $\frac{f(2+h)-f(2)}{h}$. (Simplify your answer until the h that is initially in the denominator cancels out).

$$\frac{f(2+h)-f(2)}{h} = \frac{\frac{1}{2+h+3} - \frac{1}{2+3}}{h} = \frac{\frac{1}{h+5} - \frac{1}{5}}{h}$$

$$= \frac{\frac{5}{5(h+5)} - \frac{(h+5)}{5(h+5)}}{h} = \frac{\frac{-h}{5(h+5)}}{h}$$

$$= \frac{-1}{5h+25}.$$

(If you finish early, you may go back and check your work. If you're satisfied with your work, you may turn this sheet over and look at your notes/homework for the remainder of the quiz time. You may not, of course, change any of your answers once you've done so.)