Calculus: Inclass Homework 1

September 20th, 2007

1. Consider the function

$$f(x) = x - \lfloor x \rfloor,$$

where $\lfloor x \rfloor$ is the largest integer smaller or equal than x. Use the graph to find $\lim_{x \to a} f(x)$ for all real numbers a.

2. Consider the function

$$f(x) = \cot\left(\sin^{-1}\left(\frac{x}{3}\right)\right).$$

   (a) What is the domain of f?

   (b) Simplify $f(x)$.