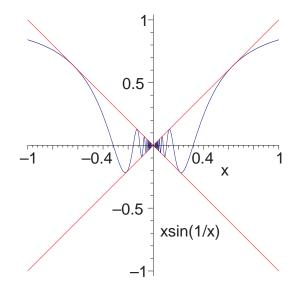
Homework for Math 151H

Professor: Frank Sottile

Due Thursday, 7 September 2006

- 1. Page 111 of our text, problems 15, 17, 19, 21, 23, 25, 27. For these, do not prove the limit, but do give a formula for δ that depends upon ϵ and (possibly) the number where the limit takes place.
- 2. Let f(x) = 1/(1+x). What is
 - (a) f(f(x)) (For which x does this make sense?)
 - (b) $f\left(\frac{1}{x}\right)$.
 - (c) f(cx).
 - (d) f(x+y).
 - (e) f(x) + f(y).
 - (f) For which numbers c is there a number x such that f(cx) = f(x). Hint: There are a lot more than you might think of at first glance.
- 3. Find the domain of the functions defined by the following formulas.
 - (a) $f(x) = \sqrt{1 x^2}$.
 - (b) $f(x) = \sqrt{1 \sqrt{1 x^2}}$.
 - (c) $f(x) = \frac{1}{x-1} + \frac{1}{x-2}$.
 - (d) $f(x) = \sqrt{1 x^2} + \sqrt{x^2 1}$.
 - (e) $f(x) = \sqrt{1-x} + \sqrt{x-2}$.
- 4. (a) For which functions f is there a function g such that $f = g^2$? Hint: You can certainly answer this question if "function" is replaced by "number".
 - (b) For which functions f is there a function g such that f = 1/g?



For your enjoyment: