Homework 2
Due 9/13/2010 in class

Name: **Section Number:**

This cover sheet must be attached as the top page of your homework.

1. Find the domain of the given function and compute the indicated values:

   (a) $f(x) = \begin{cases} 3 & x < -5 \\ x+1 & -5 \le x \le 5 \\ \sqrt{x} & x > 5 \end{cases}$, $f(-6)$, $f(-5)$, $f(25)$

   (b) $f(x) = \frac{x+1}{x-1}$, $f(x+h)$

2. Find the composite functions $f(g(x))$ and $g(f(x))$:

   (a) $f(x) = \sin(x)$, $g(x) = 1 - x^2$

   (b) $f(x) = \frac{1}{x}$, $g(x) = \tan(x)$

   (c) $f(u) = \frac{u-1}{u+1}$, $g(u) = \frac{u+1}{1-u}$

3. Sketch the graph of f . Determine whether f^{-1} exists. Find and sketch a graph of its inverse if it exists.

   (a) $f(x) = \cos x$, on $[0, \pi]$

   (b) $f(x) = x^2$, for all x

   (c) $f(x) = x^2$, for $x \le 0$

4. Simplify the following expression: $\cos 2(\sin^{-1} x + \cos^{-1})$

5. Simplify the following expression: $\cos(2 \sin^{-1} x)$