Homework I

7 Sep 2012

1. Try to find the equation of the tangent to $x^2 + y^2 = 1$ at $(0, 1)$.

2. Calculate the difference quotient of the functions
   
   (a) $f(x) = x^3$ at point $x = a$
   
   (b) $f(x) = \frac{x+3}{x+1}$ at point $x = 1$

3. Find the domain and the range of the following functions
   
   (a) $f(x) = |2x + 3|$

   (b) $f(x) = e^x$

4. If $f = \sin(2x)$ and $g = \frac{1}{x+3}$, find the following compositions and their domains
   
   (a) $f \circ f$

   (b) $g \circ g$

   (c) $f \circ g$