Math 251: Pledged Set 3

Due: September 24, 2009

This is a pledged set. Therefore, no outside help from book, calculator, or other people.

1. Use the definition of continuity and the properties of limits to show that

$$2\sqrt{3-x}$$

   is continuous on $(-\infty, 3]$.

2. Sketch the graph of an example of a function f that satisfies the following:

$$f(0) = 0, \quad f(1) = 1, \quad \lim_{x\to\infty} f(x) = 0, \quad f \text{ is odd}$$

3. Find the horizontal asymptotes and vertical asymptotes of

$$\lim_{x\to\infty} \frac{3x+5}{x-4}$$

4. Find the equation of the tangent line to

$$y = 9 - 2x^2$$

   at the point (2,1).

5. Use the definition of the derivative to find $f'(2)$ for

$$y = x^3 - 2x.$$