

### Math 251: Pledged Set 6

Due: March 16, 2010

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

1. Calculate the derivative  $y'$  to

$$2xy + y^2 = 3 \sin x$$

2. Use logarithmic differentiation to find the derivative of

$$y = x^{\cos(x)}.$$

3. Each side of a square is increasing at a rate of 6cm/s. At what rate is the area of the square increasing when the area of the square is 16cm<sup>2</sup>?

4. Show that

$$2x - 1 - \sin x = 0$$

has exactly one real root.

5. Find the local max and mins of

$$x + \sqrt{1 - x}$$