

## TMATH 124: Quiz 3

You may use any work of yours that you made from last week. This includes, practice book problems and worked out WebAssign problems. This *does not* include photocopies of notes from the book or tutorials shown on WebAssign. Graphing calculators are also not allowed. In short, you are only allowed to use *work* that you created.

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work.

1. [2 each] Differentiate each of the following and *simplify* to the point that there is no denominator (you may need to use functions like sec, csc, or cot).

$$y = (x^2 - 2x)e^x$$

$$y = \frac{x^2 - 2\sqrt{x}}{x}$$

$$y = \frac{\cos x}{\sin x}$$

2. Suppose that  $f(5) = 1$ ,  $f'(5) = 6$ ,  $g(5) = -3$ , and  $g'(5) = 2$ . Let  $P$  be the function defined as  $fg$ .

(a) [1] Find  $P'(5)$ .

(b) [2] Find the equation of the line tangent to the graph of  $P$  when  $x = 5$ .