21-124 **Groupwork 1** **January 12, 2016**

Answer the questions below. You may answer in the space provided. You may use the back or a separate sheet of paper if you need more space. You are to work in groups of no more than four people. Make sure to enter the names of your groupmates below.

Name: _____

Section: _____

Group Members: _____

1. Calculate the derivatives of the following functions. You do not need to simplify.
   (a) (1 point) $f(x) = e^{x^2+5x}$

   (b) (1 point) $g(x) = \frac{x^2-x}{2x-4}$

   (c) (1 point) $h(x) = 4x^4\left(\ln\left(x^3 + \tan x\right) + 5\right)$

2. (2 points) Find an equation of the line tangent to the graph of the curve $y = \sec x$ at the point $\left(\frac{\pi}{3}, 2\right)$.

3. (2 points) Find the x-values of all relative extrema of the function $f(x) = x^3 - 2x^2 + 1$. Determine for each relative extremum whether it is a maximum or a minimum.

4. Calculate the following antiderivatives/integrals.
   (a) (1 point) $\int_0^{\pi/2} \cos x \; dx$

   (b) (1 point) $\int (x^2+1)^2 \; dx$

   (c) (1 point) $\int \frac{5}{x^{3/2}} \; dx$