MA 113 **Name:** _____

Quiz 6 - October 17, 2013

1. Suppose that we have two variable resistors connected in parallel with resistances R_1 and R_2 and measured in ohms (Ω). The total resistance is given by

$$\frac{1}{R(t)} = \frac{1}{R_1(t)} + \frac{1}{R_2(t)}.$$

   (a) Find $R(0)$ if $R_1(0) = 30\ \Omega$ and $R_2(0) = 20\ \Omega$.

   (b) Suppose that the resistance R_1 is increasing at a rate of $0.25\ \Omega/min$ and R_2 is increasing at a rate $0.5\ \Omega/min$ at $t = 0$. What is the rate of change in R at $t = 0$?

2. Let the function $f(x) = 2^{x^2}$ be as given.

   (a) Find the x value(s) where the tangent line to the function is horizontal.

   (b) Write an equation for each horizontal tangent line in point-slope form.