Math 203: HW 7

Due on Fiday, June 14

Summer '13

John "*Curlee*" **Robertson**

Problem 1

Assume that population growth satisfies the differential equation $P'(t) = kP(t)$. (note that this means that $P(t) = \alpha e^{kt}$ for some k, we can use the information below to find k). At $t = 0$, there are 15 elephants. Then at $t = 10$, there are 60 elephants. What is the population equation, $P(t)$? How many elephants should we expect at $t = 50$?

Now suppose that the elephants are dying off, and the differential equation is $P'(t) = -\lambda P(t)$ (note that this means that $P(t) = \alpha e^{-kt}$) . This time we start with 60 elephants (when $t = 0$), and there are 15 elephants when $t = 10$. How many elephants should we expect at $t = 50$?

Problem 2

Take the derivative of the following:

$$f(x) = \frac{e^x}{ln(x^2)}$$

$$g(x) = e^{(x^2+1+2)} ln(15x^2)$$