Homework Assignment 3
(Due Monday, February 22, 2010)

1. Suppose Y is a random variable with $E(Y) = 30$ and $SD(Y) = 5$.

   (a) Let $Z = (Y - 30)/5$. Calculate $E(Z)$ and $SD(Z)$.

   (b) Let $X = -Y$. Calculate $E(X)$ and $SD(X)$.

   (c) Let $R = 5 + Y/3$. Calculate $E(R)$ and $SD(R)$.

2. In a sample of patients from a certain population, 9 out of 10 individuals respond to the treatment.

   (a) Show that $(0.5550 ; 0.9975)$ is a 95% confidence interval for the probability of response in that population. _{subject to rounding error}

   (b) Given the data, is there evidence against the assumption that the true response probability is 50% in the population?

   (c) What would the 95% confidence interval be if we had observed 10 responders among the 10 subjects sampled?

3. *Continuation from the previous Homework:*
   The average systolic blood pressure for persons of comparable age without glaucoma is *known* to be 130 mm. Use a test of hypotheses to address the question of whether the glaucomatous patients have the same mean (130) versus the two-sided alternative that theirs is different.