Math 341, Quiz 7, Spring 2009, Name_____

Student # _____

Wednesday, May 6. *Please show the complete solution (with all steps) to the problem to receive full credit.*

A manufacturer of hard safety hats for construction workers is concerned about the mean and variation of the forces its helmets transmit tot wearers when subjected to a s standard external force. The manufacturer desires the man force transmitted by helmets to be 800 pounds (or less), well under the legal 1000-pound limit, and desires σ to be less than 40. Tests were run on a random sample of n = 40 helmets, and the sample mean and variance were found to be equal to 825 pounds and 2350 pounds^2, respectively. Do the data provide sufficient evidence to indicate σ exceeds 40? Test at $\alpha = 0.01$ level.

Ho: $\sigma = 40$
Ha : $\sigma > 40$.

$\chi^2 = [(n-1)\, s^2\,] / 40^2 = [39\ (2350)]/\ 1600 = 57.28125$.

The right tail test critical value is given by $\chi^2_{0.01}$, d.f. = 39, which is approximately the same as that of $\chi^2_{0.01}$, d.f. = 40, which from the tables = 63.6907. RR for right tail test is given by $\chi^2 > 63.6907$. Since $57.28125 < 63.6907$, do not reject Ho: $\sigma = 40$.