MAT1505-01/02 21F Quiz 7 Print Name (Last, First) _____ , _____|____
Show all work, including mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation, identifying expressions by their proper symbols (introducing them if necessary), and use EQUAL SIGNS and arrows when appropriate. Always SIMPLIFY expressions. BOX final short answers. LABEL parts of problem. Keep answers EXACT (but give decimal approximations for interpretation when appropriate). Indicate where technology is used and what type (Maple, GC). Maple may not substitute for any hand calculations unless explicitly stated, but use it to check each step if you want to be safe.

The speeds of vehicles on a highway with speed limit 60 mph are normally distributed with mean 67 and standard deviation 5. Give your answers to the nearest 0.1 percent, and be sure to answer each word problem question with a complete English sentence that does not refer to the mathematics of your solution. Be sure to state the integrals you use to answer these questions.

a) What is the probability that a randomly chosen vehicle is traveling at a legal speed? [i.e., $x \leq 60$]

b) If police are instructed to ticket motorists driving 72 mph or more, what percentage of motorists are targeted?

c) Make a rough sketch of this distribution with an appropriately chosen range of speeds, labeling your axes and tickmarks, and including vertical line segments from the points on the horizontal axis at $x = 60, 72$ up to the distribution graph. Shade in the region below $x = 60$ and above $x = 72$. How do these shaded regions compare in area?

[Hint: see exercise 8.5.17 for a similar problem. Use the Maple template in the normal distribution worksheet online.]

▶ solution