Notes on 3 Significant Figures

The grading tool for the ELE 212 online homework looks for 3 significant figures on numeric answers (there are a few occasions with a different rule, but those are clearly stated in the problem). The actual calculation for each problem is done with many more digits of precision but is then "rounded" to 3 sig figs for the answer database; hence, your submission will be compared to this rounded value and if you are not careful you will receive the dreaded message **"your answer is only close (within 5%)"** and its correspondingly stiff penalty.

So, what does "3 sig figs" mean? It means that you start at the left, looking for the first non-zero digit, and then keep 2 more, rounding anything further to the right. As examples:

$$12.345 \rightarrow 12.3$$

$$-12.378 \rightarrow -12.4$$

$$0.12345 \rightarrow 0.123$$

$$0.0012378 \rightarrow 0.00124$$

$$12345 \rightarrow 12300$$

Further information:

Question: What if the answer is right on the middle of rounding? (for example, $\frac{1001}{2} = 500.5$)
Answer: The problem/answer database was created using MatLab, so it follows MatLab's rounding rule for this case – specifically, it rounds up the magnitude of the answer. For example, 500.5 becomes 501 and -500.5 becomes -501.

Question: Does the tool really check for equality? (a poor programming method)
Answer: No, it actually checks for your answer being within a very small tolerance of the database entry, on the order of 0.1%, I believe. So, if the answer is actually 10 you can get away with entering 10.0004, but don't bother.

Question: Do I have to type 3 digits for something like 5.00 ?
Answer: No, entering 5 would be fine; the system adds the zeros.