Stat 3011 First Midterm Exam (In-Class Part) October 18, 2000

The exam is closed book. You may use a calculator, and one $8\frac{1}{2}$ by 11 sheet of paper with formulas (or anything else) on it, but no other notes. Put all of your work on this test form (use the back if necessary). Show your work or give an explanation of your answer. No credit for numbers with no indication of where they came from.

1. [10 pts.] Explain difference between an experiment and an observational study. Also explain what you can do with one but not the other.

2. [15 pts.] The table defines the probability distribution of a discrete random variable X.

x	1	2	3	4	5	6	7
$\mathrm{pr}(X = x)$	1/7	1/7	1/7	1/7	1/7	1/7	1/7

   (a) Calculate the mean of the random variable X.

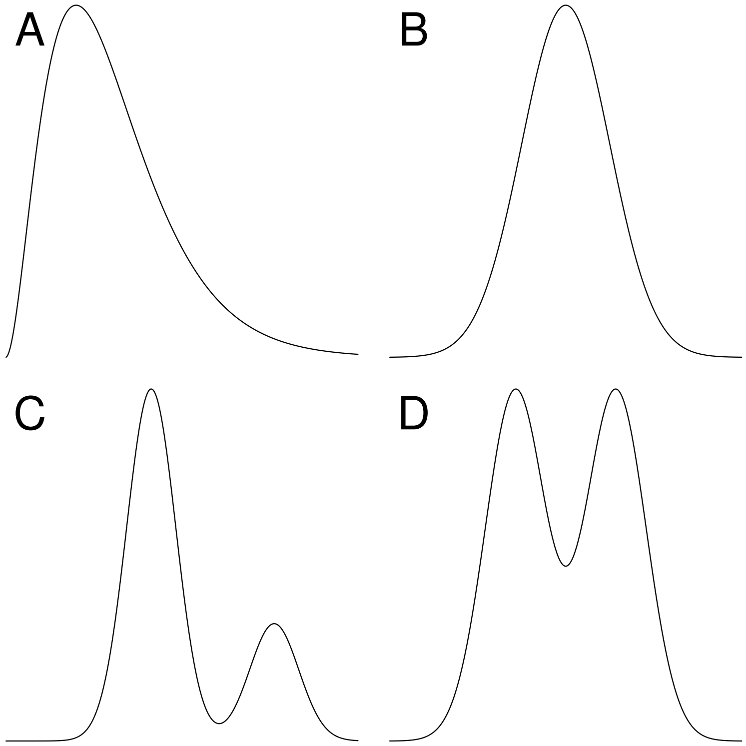
   (b) Calculate the standard deviation of the random variable X.

3. [15 pts.] Assume workplace accidents are statistically independent events. Suppose that in the Wowser Widget Works manufacturing plant there is a probability of 0.002 of an accident on any particular workday.

   (a) What is the probability of no accidents in 30 consecutive workdays?

   (b) What is the probability at least one accident in 30 consecutive workdays?

4. [10 pts.] For each of the density curves below



are described by one or more of the following terms

symmetric
skewed
long left tail
long right tail
unimodal
bimodal

For each curve give *all* of the terms that describe it (and none of the terms that don't) in the margin beside the curve.