## Review Problems for Sections 4.2 and 4.3

Math 1040-1

1. At Fontaine Lake Camp on Lake Athabasca in northern Canada, history shows that about $30 \%$ of the guests catch lake trout over 20 pounds on a 4 -day fishing trip. Let $x$ be a random variable that represents the first trip to Fontaine Lake Camp on which a guest catches a lake trout over 20 pounds. Find the probability that a guest catches a lake trout weighing at least 20 pounds for the first time on trip number 3. What is the probability that it takes more than three trips for a guest to catch a lake trout weighing at least 20 pounds?
2. The Denver Post reported that, on average, a large shopping center had an incident of shoplifting caught by security once every three hours. Let $x$ be the number of shoplifting incidents caught by security in one day during which the center is open from $10 \mathrm{a} . \mathrm{m}$. to 9 p.m. What is the probability that at least one shoplifting incident will be caught by security? What is the probability that at least three shoplifting incidents will be caught?
3. The quality control inspector of a production plant will reject a batch of syringes if two or more defective syringes are found in a random sample of eight syringes taken from the batch. Suppose that the batch contains $1 \%$ defective syringes. What is the probability that the batch will be accepted?
4. USA Today reported that the U.S. (annual) birth rate is about 16 per 1000 people, and the death rate is about 8 per 1000 people. In a community of 1500 people, what is the probability of there being 16 births in a given year? What is the probability of 10 deaths?
