HW 5-2 (Due Oct. 04, 2016) **Name:**

Print then work on it directly. Staple HW 5-1 and 5-2 together.

Problem 1 Prove that:

3.92 Ten percent of the engines manufactured on an assembly line are defective. If engines are randomly selected one at a time and tested, what is the probability that the first nondefective engine will be found on the second trial?

Problem 2

3.93 Refer to Exercise 3.92. What is the probability that the third nondefective engine will be found

a on the fifth trial?

b on or before the fifth trial?

3.94 Refer to Exercise 3.92. Find the mean and variance of the number of the trial on which

a the first nondefective engine is found.

b the third nondefective engine is found.

Problem 3

3.97 A geological study indicates that an exploratory oil well should strike oil with probability .2.

- **a** What is the probability that the first strike comes on the third well drilled?
- **b** What is the probability that the third strike comes on the seventh well drilled?
- **c** What assumptions did you make to obtain the answers to parts (a) and (b)?
- **d** Find the mean and variance of the number of wells that must be drilled if the company wants to set up three producing wells.

Problem 4

3.104 Twenty identical looking packets of white power are such that 15 contain cocaine and 5 do not. Four packets were randomly selected, and the contents were tested and found to contain cocaine. Two additional packets were selected from the remainder and sold by undercover police officers to a single buyer. What is the probability that the 6 packets randomly selected are such that the first 4 all contain cocaine and the 2 sold to the buyer do not?

Problem 5

3.108 A shipment of 20 cameras includes 3 that are defective. What is the minimum number of cameras that must be selected if we require that $P(\text{at least 1 defective}) \geq .8$?