STAT-243 Name: _____
Spring 2016

Worksheet 6: Discrete Random Variables

1. Medical research has shown that a certain type of chemotherapy is successful 70% of the time when used to treat skin cancer. Suppose five skin cancer patients are treated with this type of chemotherapy and let x equal the number of successful cures out of the five. The probability distribution for the number x of successful cures out of the five is given in the following table:

x	0	1	2	3	4	5
$p(x)$	0.002	0.029	0.132	0.309	0.360	0.168

a) Verify that this is a probability distribution. (You should be checking three things.)

b) Is the random variable X discrete or continuous?

c) Find the mean μ of the probability distribution.

d) Find the variance σ^2 of the probability distribution.

e) Find the standard deviation σ of the probability distribution.

f) Plot the probability histogram of the distribution below.

g) What is the most likely number of patients successfully cured out of five?

h) What is the probability of getting four cured patients out of five? Is this likely to occur?

i) What is the probability of getting at least four cured patients?

j) What is the probability of getting less than four cured patients?

k) What is the probability of getting three or less cured patients?