MATH 113 – SPRING 2017 **Name:**

Exam II - Extra Credit (Due: March 11, 9:25 am)

Show all work.

Include units in your answers if there are units in the question.

Consider populations for three cities below.

City A

Year	Population
2004	37,500
2008	45,000
2012	54,000
2016	64,800

City B

Year	Population
2004	50,000
2008	60,000
2012	75,000
2016	95,000

City C

Year	Population
2004	82,500
2008	97,000
2012	111,500
2016	126,000

1. For each of the above data sets, do the following.

a) Determine whether the data may be modeled by a linear function, and exponential function, or neither.

b) If the data can be modeled by either a linear function or an exponential function, write a formula to express population as a function of time in years since 2000.

c) For each city whose population can be modeled by either a linear function or exponential function, use your formula to predict the population in the year 2022.

d) For each city whose population can be modeled by either a linear function or an exponential function, determine when the population will reach 225,000.

2. a) Without using your calculator, what is log .001. Explain how you know.

b) Without using your calculator, find two consecutive whole numbers that log 750 is between and explain how you know.

c) If we compare two earthquakes, one registering at 4.2 on the Richter scale, and the other at 6.2 on the Richter scale, how much more powerful is the second than the first?