

MATH 254 – Test 1

19 February 2009

You must show all your work to receive full credit. You may use a calculator or Excel for routine calculations. However, your written work should make clear what calculations Excel or your calculator is performing. Each numbered question on this test is worth 16 points which, when added to your score on the take-home part of this test, will total 100 points. GOOD LUCK!

1) Consider the data set

16, 28, 34, 23, 96, 44, 21.

- a) Find the median of this data set.
- b) Find the five-number summary for this data set.
- c) Apply the “ $1.5 \times \text{IQR}$ ” rule to this data set. What do you conclude? Explain.

2) Consider the set of data points

$(0, 0), (0, 1), (1, 0), (1, 1)$.

Compute the correlation of this data set *without using Excel or a calculator*. Explain why your answer makes sense for this data set.

3) Recall that there are two major tests for college admissions, the SAT and the ACT. Suppose that the scores for both of these tests follow normal distributions. Suppose that the mean for the SAT is 1026 with standard deviation 209. Suppose that the mean for the ACT is 20.8 with standard deviation 4.8. Suppose Fred scores 1420 on his SAT. What would the equivalent score be on the ACT?

4) Assume the length of human pregnancy is normally distributed with mean 266 days and standard deviation 16 days.

- a) What percent of pregnancies last fewer than 240 days?
- b) How long do the longest 30% of pregnancies last?

5)

- a) State the “68-95-99.7 Rule”.
- b) Verify the “68” part of this rule by using appropriate Excel commands.