Name: *Caleb McWhorter — Solutions*
MATH 108
Fall 2021
HW 12: Due 12/09

"'Greater good?' I am your wife! I'm the greatest good you're ever gonna get!"
–Honey, The Incredibles

Problem 1. (10pt) Suppose that two exams are normally distributed. The first exam has an average score of 81 with standard deviation 9. The second exam has an average score of 71 with standard deviation 4. If Alice received a 95 on the first exam and Bob received a 82 on the second exam, who performed better? Explain.

Problem 2. (10pt) Suppose salaries at a financial analysis firm are approximately normally distributed with mean $72,000 and standard deviation $12,000.

(a) Find the probability that a randomly selected employee at the company makes more than $98,000.

(b) Find the probability that a randomly selected employee makes less than $56,000.

(c) Find the probability that a randomly selected employee makes between $56,000 and $98,000.

(d) How much would one's salary at the company need to be in order to be in the top 10% of earners at the company?

Problem 3. (10pt) A certain political policy only has a 40% approval rating with the general public. Suppose that you gather 8 random members of the public.

(a) What is the probability that exactly five of the people approval of the policy?

(b) What is the probability that at least three of the people approval of the policy?

(c) What is the probability that at least one of the people approval of the policy?

Problem 4. (10pt) A phone company claims that their new phone has an average battery life of 13 hours. You collect a random sample of 26 phones and test how long the battery lasts. You find an average battery life of 11 hours. Given that most phones are have a battery life standard deviation of 3.5 hours, construct a 95% confidence interval for the battery life for this phone. Is the company's claim compatible with this data? Explain.