Suppose that a tire manufacturer believes that the lifetimes of its tires follow a normal
distribution with mean 50,000 miles and standard deviation 5,000 miles.

1. Based on the empirical rule, 95% of tires last for between what two values?

2. How many standard deviations above the mean is a tire that lasts for 58,500 miles?

3. Determine the probability that a randomly selected tire lasts for more than 58,500 miles.

4. Determine the mileage for which only 25% of all tires last longer than that mileage.
Show/explain how you arrive at your answer.

5. Suppose the manufacturer wants to issue a money-back guarantee for its tires that fail to
achieve a certain number of miles. If they want 99% of the tires to last for longer than the
guaranteed number of miles, how many miles should they guarantee? Show/explain how you
arrive at your answer.