Math 153 - Quiz 9

November 10, 2016

Name _

Score _____

Show all work to receive full credit. Supply explanations when necessary.

- 1. (8 points) A company supplies gasoline filters for the automotive industry. One type of filter has an average life of 35,000 miles with a standard deviation of 4,000 miles. It has been found that the filter lives are normally distributed.
 - (a) About what percent of these filters should last more than 30,000 miles?

(b) If a filter is selected at random, what is the probability that it will last between 28,000 and 37,000 miles?

(c) In a sample of 10 filters, about how many should last exactly 35,000 miles?

(d) The company will replace a used filter for free if its life doesn't exceed the 15th percentile. What number of miles is at that cutoff?

2. (2 points) Suppose that at a certain automobile plant the average number of work stoppages per day is 12.0. On any given day, what is the probability of having 15 or fewer work stoppages?

3. (2 points extra credit) The problem above involves a Poisson process. Use the values of μ and σ associated with that process, and treat the numbers of work stoppages as being normally distributed. Compute $P(x \le 15)$ and compare it to your answer above.