**Lab 2 for Section 13.6** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Use good notation and show appropriate work. State your solutions to problems in complete sentences.*

1. Consider a data set with mean of 25 and standard deviation of 3. Use the 68-95-99.7 rule to find each of the following probabilities.

(a) *P*(*x* < 25) (b) *P*(25 < *x* < 34)

(c) *P*(*x* > 28) (d) *P*(19 < *x* < 28)

2. Use Table 13.7 to find the percentage of the data that lie in the following regions for a standard normal distribution.

(a) between *z* = –2.1 and *z* = 0 (b) between *z* = –1.34 and *z* = 1.62

(c) *z* ≥ –1.52 (d) for *z* ≤ –1.4

3. Find the *z*-score

(a) 40% of the area under the standard (b) 70% of the area under the standard

normal curve is above the *z* value. normal curve is below the *z* value.

(c) 5% of the area under the standard normal curve is below the *z* value.

4. Assume a set of data has a normal distribution with a mean of 74 and a standard deviation of 6.

Determine the value of the raw score if the *z-*score is

(a) –2.5 (b) 1.7

5. Assume a certain tire manufacturer produces a new tire. Tests show that the number of miles these tires last before blow-out has a normal distribution with mean 60,000 miles and standard deviation 4000 miles.

(a) Should they warrant their tires for 60,000 miles? Why or why not?

(b) If they warrant their tires for 52,000 miles, what percentage of the tires would they expect to blow out

while still under warranty?

(c) How many miles should they warrant their tires for, if they are willing to pay-off on 5% of their tires?

6. Assume the lengths in a large collection of rebar have a normal distribution with a mean of 10 feet and a standard deviation of 2 feet. What percentage of the rebar has length

(a) between 10 and 13 feet? (b) more than 9 feet?

(c) less than 12.5 feet? (d) between 6 and 10.5 feet?