Determine the value of each of the following percentiles for the standard normal distribution (Hint: If the cumulative area that you must look for does not appear in the z table, use the closest entry):

a. The 91st percentile

b. The 77th percentile

c. The 50th percentile

d. The 9th percentile

e. What is the relationship between the 70th z percentile and the 30th z percentile?

Data from the paper “Fetal … Composition” suggest that a normal distribution with mean 3500 grams and standard deviation 600 grams is a reasonable model for the probability distribution of the continuous numerical variable X = birth weight of a randomly selected full-term baby. What proportion of birth weights are between 2900 and 4700 grams?

Garbage trucks entering a particular waste management facility are weighed and then they offload garbage into a landfill. Data from the paper “Estimating … GPS” suggest that a normal distribution with mean 13 minutes and standard deviation 3.9 minutes is a reasonable model for the probability distribution of the random variable X = total processing time for a garbage truck at this waste management facility (total processing time includes waiting time as well as the time required to weigh the truck and offload the garbage). Suppose that we want to describe the total processing times of the trucks making up the 10% with the longest processing times. These trucks would be the 10% with times corresponding to the shaded region in the accompanying illustration.

Determine the value of z\* such that

1. -z\* and z\* separate the middle 95% of all z values from the most extreme 5%
2. -z\* and z\* separate the middle 90% of all z values from the most extreme 10%
3. -z\* and z\* separate the middle 98% of all z values from the most extreme 2%
4. -z\* and z\* separate the middle 92% of all z values from the most extreme 8%

