

Math 1040–1
July 13, 2012

Name: _____

Directions: Show all work for full credit. Clearly indicate all answers. Simplify all mathematical expressions completely. Unless otherwise directed, give each decimal approximation rounded to at least three decimal places. Each part of each question is worth 10 points.

1. Calculate the probability that a standard normal random variable is between $z = -1.96$ and $z = 1.96$.
2. A survey was conducted to measure the heights of U.S. men. In the 20–29 age group, the heights were normally distributed, with a mean of 69.9 inches and a standard deviation of 3 inches. A study participant is randomly selected.
 - (a) Find the probability that his height is less than 66 inches.
 - (b) Find the probability that his height is between 66 and 72 inches.

(c) What height represents the 90th percentile?

(d) What height represents the first quartile?

3. The heights of women in the United States (ages 20–29) have a mean of 64.3 inches and a standard deviation of 2.6 inches. A random sample of 60 women in this age group is selected. What is the probability that the mean height for the sample is greater than 66 inches?