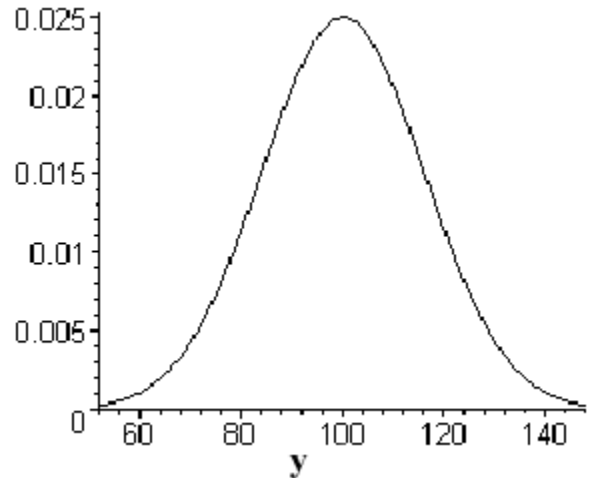


1. The Stanford-Binet IQ test is normally distributed with a mean score of 100 and a standard deviation of 16. A graph of the probability density function for the scores is at the right.

a. (7 points) Find the probability that a randomly chosen person who has taken the test has a score that is less than 80 or greater than 132. Also represent this probability on the given graph.

b. (3 points) Suppose 200 people who have taken the test are randomly chosen. Let the random variable X represent the number who have a test score that is less than 80 or greater than 132. How is the random variable X distributed? You should give the name of the distribution and the values of all relevant parameters of the distribution.



2. (2 points) Suppose that a random variable Y has a probability density function given by

$f(y) = ky^2e^{-y/10}$, $y > 0$, and $f(y) = 0$ elsewhere. Which of the following is the value of k ?

(a) 0.0001666...

(b) 0.0005

(c) 0.01

(d) 200

(e) 600

3. (8 points) Explosive devices used in mining operations produce nearly circular craters when detonated. The radii of these craters are exponentially distributed with mean 10 feet. Find the probability that a randomly selected crater has a radius of more than 20 feet. (Begin your answer "Let the random variable, Y , represent")