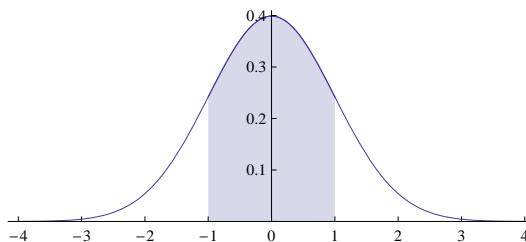


Normal Distributions

Normal distributions are the most important distributions. A normal distribution is specified by giving its *mean* μ and its *standard deviation* σ . The normal distribution with mean μ and standard deviation σ is denoted $N(\mu, \sigma)$. For example, $N(120, 15)$ denotes the normal distribution with mean $\mu = 120$ and standard deviation $\sigma = 15$.

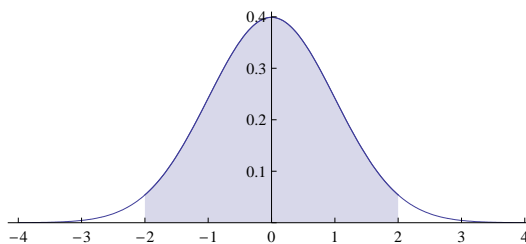
The special normal distribution $N(0, 1)$ is called the *standard normal distribution*. We'll look at this first.

1. To the right is a graph of the standard normal distribution $N(0, 1)$. The region under the graph between the values -1 and 1 is shaded.



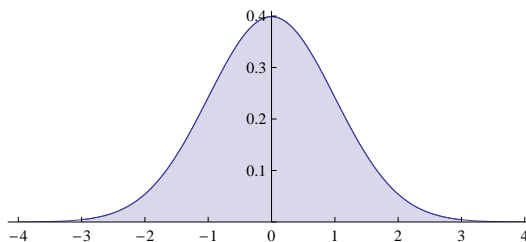
- (a) Estimate the area of this shaded region.
 (b) What does this area mean in terms of a proportion of values in this distribution?

2. To the right is a graph of the standard normal distribution $N(0, 1)$. The region under the graph between the values -2 and 2 is shaded.



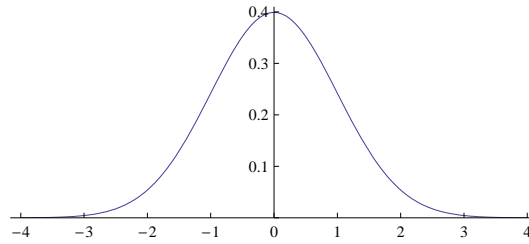
- (a) Estimate the area of this shaded region.
 (b) What does this area mean in terms of a proportion of values in this distribution?

3. To the right is a graph of the standard normal distribution $N(0, 1)$. The region under the graph between the values -3 and 3 is shaded.



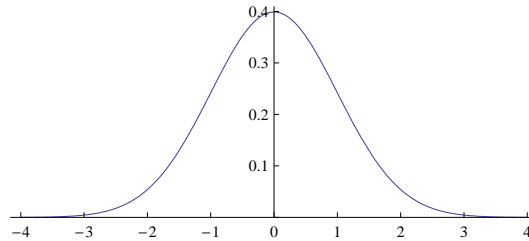
- (a) Estimate the area of this shaded region.
 (b) What does this area mean in terms of a proportion of values in this distribution?

4. Below is a graph of the standard normal distribution $N(0, 1)$.



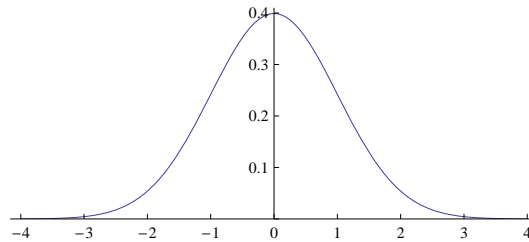
- (a) Shade in the region below the graph to the left of the value -1 .
- (b) Estimate the area of this shaded region.

5. Below is a graph of the standard normal distribution $N(0, 1)$.



- (a) Shade in the region below the graph to the left of the value 2.
- (b) Estimate the area of this shaded region.

6. Below is a graph of the standard normal distribution $N(0, 1)$.



- (a) Shade in the region below the graph between the values -1 and 2.
- (b) Estimate the area of this shaded region.