Introduction to Statistics
Activity 8.3a **NAME:**

Critical Values

Before calculating a confidence interval, you need to be able to determine the critical value, z^*. And the one you want may not be in the standard table. As an example, suppose you want to find the value of z^* for a 98% confidence interval. In other words, find the value z^* such that the area under the standard normal curve between $-z^*$ and z^* is equal to 0.98 by following these steps:

a) Draw a sketch of the standard normal curve and shade the area corresponding to the middle 98% of the distribution. Also indicate roughly where $-z^*$ and z^* fall in your sketch.

b) Based on your sketch, what's the total area under the curve to the left of z^*? [Hint, it's not 98%]

c) Use the z-score calculator (on the class GoogleDoc) to find the value z^* that has this area to its left (your answer to part b), under the standard normal curve.

This value z^*, which you should have found to be approximately 2.33, is called the **upper 0.010 critical value** of the standard normal distribution because the area to its right under the standard normal curve is 0.010. This critical value is used for 98% confidence intervals.

d) Repeat parts a–c to find the critical value corresponding to a 95% confidence interval.