The last three questions refer to this statement, but each question is separate (i.e. you can get the first one wrong and that won't affect the others): Corporate securities (or publicly traded stocks) are an investment opportunity for individuals as well as institutions. The 10,000 stocks available for investment to U.S. residents are normally distributed with a mean one-year return of $-1\%$ and a standard deviation of $12\%$.

SHOW YOUR WORK FOR FULL CREDIT.

11. What percentage of stocks had one-year returns between $-16\%$ and $+2\%$? (5 points)

   \[ Z = \frac{-16 - (-1)}{12} = -1.25 \implies 78.87\% \]
   \[ \frac{78.87}{2} = 39.435\% \]

   \[ Z = \frac{2 - (-1)}{12} = 0.25 \implies 99.74\% \]
   \[ \frac{19.74}{2} = 9.87\% \]

   \[ 39.435\% + 9.87\% = 49.305\% \text{ of stock} \]

12. A stock is at 5\textsuperscript{th} percentile (i.e. 5\% of the stocks have returns lower than this stock), what is its one-year return? (5 points)

   \[ \text{want to find } Z\text{-score with area value of } \sim 90\% \]
   \[ \implies Z = -1.65 \]
   \[ -1.65 = \frac{x - (-1)}{12} \]
   \[ x = -20.80\% \]

13. In order to meet your retirement goals, you need to buy stocks that have a return of 8\% or more. Approximately how many stocks out of the 10,000 qualify? (5 points)

   \[ Z = \frac{+8 - (-1)}{12} = +.75 \text{ (table) } 54.67\% \]

   \[ \text{want value of one tail:} \]
   \[ \frac{100 - 54.67}{2} = 22.665\% \]

   \[ (.22665)(10,000) = 2266.5 \approx 2266 \text{ stocks} \]