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 \(5\%\).

SHOW YOUR WORK FOR FULL CREDIT.

11. What percentage of stocks had one-year returns between -3\% and +6\%? (5 points)

\[
\begin{align*}
\text{z} &= \frac{-3 - (-1)}{5} = -0.4 \\
\text{z} &= \frac{6 - (-1)}{5} = 1.4 \\
\text{Area from } -0.4 \text{ to } 0 &\approx 15.54\% \\
\text{Area from } -1.4 \text{ to } 1.4 &\approx 83.85\% \\
\text{Total area} &\approx 57.46\%
\end{align*}
\]

* 12. In order to meet your retirement goals, you need to buy stocks that have a return of 5\% or more. Approximately how many stocks qualify? (5 points)

\[
\begin{align*}
\text{z} &= \frac{-1.2 - 1}{5} = -0.48 \\
\text{Area from } -1.2 \text{ to } 1 &\approx 76.99\% \\
100\% - 76.99\% &\approx 23.01\% \\
\text{I only want half, therefore} \\
\frac{23.01\%}{2} &\approx 11.505\%
\end{align*}
\]

11,505\% out of 10,000

11.505\% stocks qualify

13. A stock is at 10\% percentile (i.e. 10\% of the stocks have returns lower than this stock), what is its one-year return? (5 points)

\[
\begin{align*}
\text{z} &= 1.30 \\
\frac{-1.30}{0.5} &= \frac{x - (-1)}{5} \\
x &= -7.5\%
\end{align*}
\]