For this quiz, assume the following: The risk-free rate is 2% and the market risk premium is 7%. Starbucks has a beta of 0.8, and a standard deviation of 20%. Nordstrom has an expected return of 16%, and a standard deviation of 30%. Starbucks and Nordstrom have a correlation coefficient of 0.35.

1. What is the expected return and standard deviation of a portfolio that is 40% Starbucks and 60% Nordstrom? [2]

\[ E[R_{\text{lux}}] = 0.02 + 0.8(0.07) = 0.076 \]

\[ E[R_p] = (0.4)(0.076) + (0.6)(0.16) = 0.1264 \]

\[ \sigma^2 = (0.4)^2(0.2)^2 + (0.6)^2(0.3)^2 + 2(0.4)(0.6)(0.2)(0.3)(0.35) = 0.04888 \]

\[ \sigma = 0.221 \]

2. The last 3 months of returns for a stock are the following:
   a. What is the expected return for next month? [1]

\[ (1/3)(0.10 - 0.08 + 0.13) = 0.05 \]

   b. What is the standard deviation of the stock’s returns? [1]

\[ \sigma^2 = \frac{(0.10 - 0.05)^2 + (-0.08 - 0.05)^2 + (0.13 - 0.05)^2}{3 - 1} = 0.0129 \]

\[ \sigma = 0.1136 \]

   c. If returns are normally distributed with your expected return and standard deviation, what is a 95% confidence interval for next month’s return? [1]

\[ \bar{R} \pm 2\sigma, \text{so it is } 0.05 \pm 2(0.1136), \text{for a range of -0.1772 to 0.2772} \]

3. Let’s say you buy a stock for $50 and sell it for $55 after receiving a $1 dividend. What was your return from your investment in the stock? [1]

\[ R = \frac{\text{Div} + (P_f - P_0)}{P_0} = \frac{1 + (55 - 50)}{50} = \frac{6}{50} = 0.12 \]

\[ E[R] = \frac{R_1 + R_2 + \ldots + R_T}{T} \quad E[R_p] = w_1E[R_1] + w_2E[R_2] \quad E[R_f] = r_f + \beta_f(E[R_m] - r_f) \quad R = \frac{\text{Div} + (P_f - P_0)}{P_0} \]

\[ \sigma^2 = w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2\sigma_1\sigma_2\rho_{AB} \quad \bar{R} \pm 2\sigma \quad \sigma^2 = \frac{(R_1 - \bar{R})^2 + (R_2 - \bar{R})^2 + \ldots + (R_T - \bar{R})^2}{T - 1} \]