Solution to FIN 533 Homework
Due Wednesday September 24

1.

$$E(r) = \sum \Pr(s)\, r(s)$$

$$E(r) = 0.20(-25\%) + 0.40(10\%) + 0.40(25\%) = 9\%$$

$$\sigma = \sqrt{\sum \Pr(s)[r(s) - E(r)]^2} =$$

$$\sqrt{0.2(-25\% - 9\%)^2 + 0.4(10\% - 9\%)^2 + 0.4(25\% - 9\%)^2} = 18.28\%$$

2.

$$COV(r_{1,}, r_2) = \sum \Pr(s)[\, r_i(s) - E(r_1)][r_2(s) - E(r_2)]$$

$$0.2(-25\% - 9\%)(35\% - 5.4\%) + 0.4(10\% - 9\%)(-5\% - 5.4\%) + 0.4(25\% - 9\%)(1\% - 5.4\%)$$

$$= -233.60$$

$$\sigma_p^2 = \sqrt{w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2COV(r_1, r_2)}$$

$$= \sqrt{(0.7)^2(18.28\%)^2 + (0.3)^2(15.04\%)^2 + 2(0.7)(0.3)(-233.60)} = 9.27\%$$