Solution to FIN 533 Homework
Due Thursday Oct. 22

1. Using duration rule 5: $\frac{1+y}{y} = \frac{1.10}{0.10} = 11 \; years$

2. Using duration rule 6: $\frac{1+y}{y} - \frac{T}{(1+y)^T - 1} = \frac{1.10}{0.10} - \frac{10}{(1.1)^{10} - 1} = 11 - 6.2745 = 4.7255 \; years$

3. Using duration rule 1: the duration of a zero-coupon bond equals its time to maturity: 5 years

$$\frac{1+y}{y} - \frac{(1+y)+T(c-y)}{c\left[(1+y)^T - 1\right]+y} = \frac{1.10}{0.10} - \frac{(1.10)+5(0.12-0.10)}{0.12[(1.10)^5 - 1]+0.10} =$$

4. Using duration rule 7:

$$11 \; years - 6.9260 = 4.0740 \; years$$