

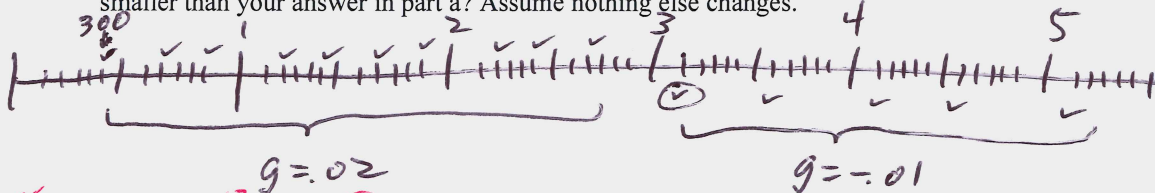
Quiz A for 9:45 Class: 7/19/13

Name Key

Note: You do not need to solve anything. Just set up all equations, plug in all the numbers, and indicate which variable you are solving for (in each equation).

Assume that five months from today you plan to make the first of several quarterly deposits into an account that pays an APR of 7.5% with monthly compounding. Your first deposit will equal \$300, each of your subsequent quarterly deposits will grow by 2% each, and your final quarterly deposit will occur two years and eight months from today. From this account you plan to make semiannual withdrawals beginning three years and one month from today. Subsequent semiannual withdrawals will shrink by 1% each and your final withdrawal will occur five years and one month from today.

- What is the size your first withdrawal?
- If your withdrawals were all the same size rather than shrinking, would your first withdrawal be larger or smaller than your answer in part a? Assume nothing else changes.



$$\begin{aligned}
 &g = 0.02 \\
 &g = -0.01 \\
 &+5 \quad a. \quad r\left(\frac{1}{12}\right) = \frac{0.075}{12} \quad (12) \\
 &+3 \quad r\left(\frac{1}{4}\right) = \left(1 + r\left(\frac{1}{12}\right)\right)^3 - 1 \quad (8) \\
 &+3 \quad r\left(\frac{1}{2}\right) = \left(1 + r\left(\frac{1}{12}\right)\right)^6 - 1 \quad (8) \\
 &+5 \quad (FV_{2yrs, 8mo} = \frac{300}{r\left(\frac{1}{4}\right) - 0.02} \left(\left(1 + r\left(\frac{1}{4}\right)\right)^{10} - (1.02)^{10} \right) \quad (14)
 \end{aligned}$$

$$\begin{aligned}
 &+5 \quad (PV_{2yrs, 7mo} = \frac{FV_{2yrs, 8mo}}{\left(1 + r\left(\frac{1}{12}\right)\right)^{15}} = A \quad (10) \\
 &+5 \quad (PV_{2yrs, 7mo} = \frac{C}{r\left(\frac{1}{2}\right) - (-0.01)} \left(1 - \left(\frac{1-0.01}{1+r\left(\frac{1}{2}\right)}\right)^5 \right) = B \quad (17)
 \end{aligned}$$

→ set $A = B$ + solve for C +1

b. smaller +5