

Name: _____

MA 2080: Worksheet 1

1. Compute the amount we will have in 3 years if we earn simple interest on \$200 at 4%.
2. Compute the amount we will have in 3 years if we earn interest compounded annually on \$200 at 4% APR.
3. Compute the amount we will have in 3 years if we earn interest compounded monthly on \$200 at 4% APR. So it is compounded 12 times per year.
4. Compute the amount we will have in 3 years if we earn interest compounded monthly on \$200 at 4% APR. So it is compounded 12 times per year.
5. I want to retire! If I deposit \$1000 per month for the next twenty years at 7% (a conservative estimate for the total stock market index) interest compounded annually, how much will I have when I retire.
6. After I retire, I expect to live off the amount above (Problem 5). For this problem assume I want twenty years of annual payments with 5% interest. How much can I expect as a payment each year for the twenty years?
7. After I retire, I expect to live off the amount above (Problem 5). For this problem assume I want forty years of annual payments with 5% interest. How much can I expect as a payment each year for the forty years?
8. After I retire, I expect to live off the amount above (Problem 5). For this problem assume I want forty years of annual payments with 5% interest. How much can I expect as a payment each year for the sixty years? What do you notice about the last few problems?

- Simple Interest

$$A = P(1 + rt)$$

- Compound interest

$$A = P\left(1 + \frac{r}{m}\right)^{mt}, \text{ and } A = P(1 + i)^n$$

- Continuously compounded

$$A = Pe^{rt}$$

- Future Value

$$FV = PMT \frac{(1 + i)^n - 1}{i}$$

- Present Value

$$PV = PMT \frac{1 - (1 + i)^{-n}}{i}$$