SPEA V401 – Financial and Cost-Benefit Analysis, Spring 2024

Homework #1

**Due Wednesday, Jan 31**

**Please show all of your work.** You will not receive full credit for a correct answer without work. In addition, partial credit cannot be awarded for incorrect answers without work shown. Showing your work means using the formulas we have learned in class. Using built in Excel finance formulas does not count as complete work. You may solve these problems by hand with pen and paper or using Excel (or a combination). If you use Excel, be sure to format your document so it is labeled and well-organized document

1. You deposit $800 into a savings account that pays 1.4% compounded annually. How much will you have in the account if you leave the money there for 12 years?
2. You would like to have $32,000 in an account 10 years from now. You find an investment that would pay a 3.2% annual rate of return. How much would you have to invest now to meet your goal?
3. An investment would cost $4,200 upfront, and pay you $9,200 ten years from now. If your hurdle rate is 6% what is the net present value of this investment? Is it a good investment at this hurdle rate?

1. You deposit $250 in a savings account that pays 3% interest annually. Using the Future Value formula, show how long you would have to leave the money in the account for it to double.
2. You have $6,000 in savings and would like to buy a used car that would cost $12,000 in three years. What is the minimum interest rate you would need to earn on your $6,000 to succeed in your goal?
3. You buy a house and take out a mortgage for $275,000 at a rate of 4.4% with equal annual payments over the next 30 years. What will your payments be?
4. You want to retire 45 years from now and would like to have $1.5 million in your retirement account at that time. You will make equal payments each year to the account. If you can earn a 4% annual return on your account, how much should you set aside each year?
5. A fifteen year bond has annual payments of $1,000. If the discount rate is 6%, what is the present value of the bond?
6. You just won the lottery! You are given the following choice. You can take your winnings as a single lump sum of $1 million right now. Or you can receive annual payments of $45,000 ever year in perpetuity. Which option would you choose given a hurdle rate of 4%?
7. An investment costs $800 up front and $500 five years from now. It yields returns of $300 every other year (in years 2, 4, 6, etc) for the next 15 years. In addition, in year 15, it will pay off an additional amount of $600. If the discount rate is 6%, is this a worthwhile investment?