Time Value of Money and Valuing Investments

Physics and Mathematics of Sustainable Energy

College of the Atlantic

1. You are considering an investment that will pay you $2000 for the next three years. For this problem, assume a discount rate of 3%.

   (a) In one year you will receive a payment of $2000. What is the present value of this payment?

   (b) In two years you will receive another payment of $2000. What is the present value of this payment?

   (c) In three years you will receive yet another payment of $2000. What is the present value of this payment?

   (d) What is the total present value of all three of these payments?

2. Repeat problem 1 using a discount rate of 5%.

3. Repeat problem 1 using a discount rate of 7%.

Year	$r = 0.03$	$r = 0.05$	$r = 0.07$
1			
2			
3			
TOTAL			

4. Would you buy the investment described in problem 1 for $5700? For $5000?

5. Suppose the investment described in problem 1 cost you $4000. What is the ROI of this investment? What is the payback time?

6. Suppose the investment in problem 1 cost $5450. What would be its IRR? What would its IRR be if the investment cost $5650?

7. You spend $10,000 to install a solar PV system. The cells generate $900 worth of electricity every year for 15 years.

   (a) What is the payback time on the investment?

   (b) What is the ROI?