

The Time Value of Money

Physics and Mathematics of Sustainable Energy

College of the Atlantic, October 19, 2022

- You have \$10,000 that you put in a bank account that gets two percent interest.
 - How much money will you have in five years?
 - How much money will you have in ten years?
 - In 15 years you wish to have \$20,000 to use as a down payment for a house. How much money should you deposit in a bank today in order to achieve this goal?
 - Assume an interest rate of 3 percent.
 - Assume an interest rate of 5 percent.
 - Suppose that in fifty years someone will give you a million dollars. What is the present value of this gift?
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- You are considering an investment that will pay you \$2000 for the next three years. For this problem, assume a discount rate of 3%.
 - In one year you will receive a payment of \$2000. What is the present value of this payment?
 - In two years you will receive another payment of \$2000. What is the present value of this payment?
 - In three years you will receive yet another payment of \$2000. What is the present value of this payment?
 - What is the total present value of all three of these payments?
 - Repeat problem 4 using a discount rate of 5%.
 - Repeat problem 4 using a discount rate of 7%.

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

- How much would you pay for the investment described in problem 4?