

FIN 301 Review Session before Exam 1

If you have questions, please email me / ask me during the review session.

1. You invest \$100 for 1 year at a rate of 10%. How much will you have in 1 year?

A: \$110

2. You need \$110 in 1 year. If you can invest at a rate of 10%, how much do you need to save right now?

A:\$100

3. You need \$110 in 1 year, \$500 in 2 years, and \$1,000 in 3 years. If you can invest at a rate of 10%, how much do you need to save right now?

A: \$1264.538

4. You need \$5 million in 1 year, \$5 million in 2 years, and \$5 million in 3 years. If you can invest at a rate of 10%, how much do you need to save right now?

A:\$12.43 million

5. You need \$5 million every year for 10 years, starting at the end of the year ($t=1$). If your discount rate is 10%, how much do you need to put aside right now?

A:\$30.72 million

6. You need \$5 million every year for 20 years, starting at the end of the year ($t=1$). If your discount rate is 10%, how much do you need to put aside right now?

A:\$42.57 million

7. You need some money every year for 10 years, starting at the end of the year ($t=1$). At $t=1$, you need \$5 million, but that amount is increasing by 5% every year. If your discount rate is 10%, how much do you need to put aside right now?

A:\$37.12 million

8. You need some money every year for 10 years, starting at $t=10$. At $t=10$, you need \$5 million, but that amount is increasing by 5% every year. If your discount rate is 10%, how much do you need to put aside right now?

A:\$15.78 million

9. You need to pay for your child's college, starting at $t = 26$. The cost will be \$25,000 at $t=26$, $t=27$, $t=28$, $t=29$, and $t=30$. How much do you need to have at $t=25$ if your discount rate is 10%?

A:\$94,769.67

10. You need to pay for your child's college, starting at $t = 26$. The cost will be \$25,000 at $t=26$, $t=27$, $t=28$, $t=29$, and $t=30$. How much do you need to save **right now**? Assume your discount rate is 10%.

A:\$8,746.86

11. You save \$5,000 every year for 25 years, starting at $t = 1$, to pay for your child's education (Q9). If your return is 8%, will you have enough?

A:\$365,529.70 yes that's plenty.

12. A company is thinking about buying a new plant. The plant will produce revenues of \$4 million every year for 11 years, starting at $t = 5$. At $t = 17$, they will be able to sell the plant for \$2 million. If the discount rate is 10%, what is the PV of revenues as of right now?

A:\$18.14 million

12 part 2:

The cost of the new plant would be \$15 million right now, and then \$0.5 million every year for 15 years, starting at $t = 2$. If the discount rate is 10%, what is the PV of costs as of right now?

A:\$18.46 million

13. A stock pays a dividend of \$5 every year forever, starting at $t = 10$. What are you willing to pay for the stock right now if your discount rate is 6%?

A:\$49.32

14. A stock pays a dividend of \$5 tonight. You will get that dividend tonight if you buy right now. That dividend will then grow and be paid forever at a rate of 1%. What are you willing to pay for the stock right now if your discount rate is 6%?

A:\$106 (Note that at $t=1$, you get \$5.05. Put that into the growing perpetuity and then add the \$5 you get at $t=0$. OR: put \$5 into the growing perpetuity. This gives you the price as of $t = -1$. Then multiply your result by 1.06 and you will get the same).

15. Your uncle gave you \$8,000 to buy a car after college. If you invest at a rate of 7%, how much can you spend on a car in 4 years?

A:\$10,486.37

16. Your uncle gave you \$8,000 to buy a car after college. If you want to buy a car in 4 years that costs \$20,000, what does your return need to be?

A:25.75% roughly.

17. A lottery ticket has a 0.1% chance of winning. If you do win, you will get paid \$500 every month forever. If your monthly discount rate is 1.5%, how much are you willing to pay for the lottery ticket?

A: \$33.33

18. A philanthropist announced the “Drexel forever” campaign, where she promises that the school will have an additional \$100,000 available every year forever, starting right now ($t=0$). Because she will not live forever, she wants to make one singular cash payment right now, which is supposed to pay for all of the future cash flows. Assume the rate of return is 6.2%.

a) How much does the philanthropist need to donate right now?

A: \$1,712,903. Again, take the perpetuity and then either add \$100,000 or multiply by 1.062 because the donations are supposed to be **starting right now**.

- b) Assume instead that she donates \$5,000,000 for scholarships right now. The first scholarship will be paid out at $t = 1$. The scholarships will be paid forever. If the school can invest this money at a rate of 6.2%, how much can the school spend every year on scholarships?

A: \$310,000