

3. Laura deposited \$2,000 in a CD account at 3% interest compounded monthly, and after 2 years, she withdraws all the money from that bank and deposits in another CD account at another bank which pays 3.5% compounded annually. How much will she have in her account 3 years after she had invested in the new bank? If she did not change the banks, how much would she have had in 5 years after depositing \$2,000 in the first bank?

4. How much should I save today in a CD account, which pays 3% compounded monthly, if I am to have \$3000 in 5 years?

5. Michael's parents had deposited \$2,500 in an account which pays 2.25% interest compounded daily when Michael was born. If no money is deposited to or withdrawn from that account, then how old will Michael be when that account has a balance of \$5,000?

6. If you deposit \$1,000 in a CD at The First United Trust Bank of Far Far Away Land, which is run by Princess Fiona and Shrek, you are guaranteed to get \$1,500 after 5 years. All you know is they compound the interest semiannually. How much is their interest rate?

7. Calculate how much principal you need invested at 4% for 5 years to achieve \$1,000 under different compounding plans (keep 8 decimal places):

Plan	A	r	t	n	P
Annually	\$1,000	0.04	5	1	
Semiannually	\$1,000	0.04	5	2	
Quarterly	\$1,000	0.04	5	4	
Monthly	\$1,000	0.04	5	12	
Weekly	\$1,000	0.04	5	52	
Daily	\$1,000	0.04	5	365	
Hourly	\$1,000	0.04	5	365×24	
Every Minute	\$1,000	0.04	5	$365 \times 24 \times 60$	
Every second	\$1,000	0.04	5	$365 \times 24 \times 60 \times 60$	
Continuously	\$1,000	0.04	5	-	

8. Growth of bacteria can be modeled as an exponential growth. At the start of an experiment there are 3,500 bacteria present. Two hours later, the population is 5,200.

(a) Determine the growth constant.

(b) Determine the population (to the nearest bacteria) five hours after the experiment began.

(c) When will the population reach 10,000?

9. Radioactive decay can be modeled as an exponential decay. The half-life (i.e. if you start with some amount, the time it takes to decay down to half of the starting amount) of Iodine-131 is 8 days.

(a) Determine the decay constant.

(b) If you start with a sample of 5 grams of Iodine-131, how much of it will remain after 6 days?

(c) How long will it take until only 1 gram of Iodine-131 is left?