Financial Algebra Advanced Algebra with Financial Applications 2nd edition Gerver Test Bank

SKU: 9781337271790-TEST-BANK

Name:_____ Class:_____ Date:_____

Chapter 02 - Banking Services

1. Aaron wants to know how much he needs to save each month in his savings account to have a certain amount in the future. He should use the formula for present value of a periodic deposit investment.

a. True

b. False

ANSWER: False
RATIONALE: He should use the future value of periodic investment.
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:26 AM
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2. Interest compounded semiannually is compounded four times a year.

a. True

b. False

ANSWER: False
RATIONALE: Semiannual compounding is interest compounded twice per year, or every six months.
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:28 AM
DATE MODIFIED: 2/7/2017 7:15 AM

3. To reconcile a check register means to match all the entries in the register with the statement received from the bank and correct any discrepancies.

a. True

b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:30 AM
DATE MODIFIED: 2/7/2017 7:15 AM

4. Maxine deposited $1,000 into an account that pays 4.5% interest, compounded daily. At the end of six months, she has earned $12 in interest.

a. True

b. False

ANSWER: False
RATIONALE: $B = p\left(1+\frac{r}{n}\right)^{nt} = 1{,}000\left(1+\frac{0.045}{365}\right)^{0.5(365)} \approx \$1{,}022.75; 1{,}022.75 - 1{,}000 = \$22.75$ interes
POINTS: 1
QUESTION TYPE: True / False

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HAS VARIABLES: False
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5. The Federal Deposit Insurance Corporation insures bank accounts up to a particular amount. This means that if the bank fails, the money is guaranteed by the government.

a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:49 AM
DATE MODIFIED: 2/13/2017 12:15 AM

6. Compound interest earns more than simple interest at the same interest rate because compounding pays interest on the interest earned.

a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:50 AM
DATE MODIFIED: 2/7/2017 7:18 AM

7. Annual percent yield is higher than the annual percentage rate because APY takes into account the additional interest earned by compounding.

a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:57 AM
DATE MODIFIED: 2/7/2017 7:18 AM

8. James and Terry open a savings account that has a 2.75% annual interest rate, compounded monthly. They deposit $500 into the account each month. How much will be in the account after 20 years?

a. $48,407.45 b. $159,744.59
c. $330,600.15 d. $580,894.18

ANSWER: b

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RATIONALE:

$$B = \frac{P\left(\left(1+\frac{r}{n}\right)^{nt}-1\right)}{\frac{r}{n}} = \frac{500\left(\left(1+\frac{0.0275}{12}\right)^{12(20)}-1\right)}{\frac{0.0275}{12}} \approx \$159{,}744.59$$

POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 1/25/2017 3:58 AM
DATE MODIFIED: 2/13/2017 12:18 AM

9. Margarite wants to take a trip to Japan in 8 years. She knows she will need about $4,200. How much should she deposit into an account now that pays 3.5% interest, compounded daily, to meet her goal? Round to the nearest dollar.

a. $1,026 b. $1,706
c. $3,174 d. $3,781

ANSWER: c
RATIONALE:

$$P = \frac{B}{\left(1+\frac{r}{n}\right)^{nt}} = \frac{4{,}200}{\left(1+\frac{0.035}{365}\right)^{365(8)}} = \$3{,}174$$

POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 1/25/2017 4:03 AM
DATE MODIFIED: 2/13/2017 12:20 AM

10. Tamika opened a money market account that has a 4.25% annual interest rate, compounded annually. She deposits $1,750 into the account each year. How much interest will the account earn after 15 years?

a. $9,419.40 b. $33,949.40
c. $35,699.40 d. $71,398.40

ANSWER: a
RATIONALE:

$$B = \frac{P\left(\left(1+\frac{r}{n}\right)^{nt}-1\right)}{\frac{r}{n}} = \frac{1{,}750\left(\left(1+\frac{0.0425}{1}\right)^{1(15)}-1\right)}{\frac{0.0425}{1}} \approx \$35{,}699.40 - (1{,}750 \times 15) = \$9{,}4$$

POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 1/25/2017 4:10 AM
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11. Jackson deposited $5,000 at 3.8% interest, compounded continuously, when he was 18 years old. How much will be in the account when he is 40 years old if he made no other deposits or withdrawals?

a. $19,000.19 b. $11,535.60
c. $10,691.38 d. $8,800.00

ANSWER: b
RATIONALE: $B = pe^{rt} = 5{,}000\, e^{0.038(22)} \approx \$11{,}535.60$

POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 1/25/2017 4:15 AM
DATE MODIFIED: 2/13/2017 12:24 AM

12. Loretta deposits $350 every quarter into a savings account that earns 4.5% interest compounded quarterly. What is the balance after 7 years?

a. $10,312.63 b. $11,344.18
c. $11,444.27 d. $12,477.74

ANSWER: c
RATIONALE: $$B = \frac{P\left(\left(1+\frac{r}{n}\right)^{nt}-1\right)}{\frac{r}{n}} = \frac{350\left(\left(1+\frac{0.045}{4}\right)^{4(7)}-1\right)}{\frac{0.045}{4}} \approx \$11{,}444.27$$

POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 1/25/2017 4:19 AM
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13. Bob and Kathy want to save a total of $500,000 for retirement. How much should they deposit monthly into an account that pays 3.9% interest, compounded monthly, to meet their goal in 24 years?

a. $950.41 b. $2,102.34
c. $1,051.17 d. $4,446.41

ANSWER: b
RATIONALE: $$P = \frac{B \times \frac{r}{n}}{\left(1+\frac{r}{n}\right)^{nt}-1} = \frac{500000 \times \frac{0.039}{12}}{\left(1+\frac{0.039}{12}\right)^{12(24)}-1} \approx \$1{,}051.17$$

POINTS: 1
QUESTION TYPE: Multiple Choice
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14. How much more would $1,000 earn in 5 years in an account compounded continuously than in an account compounded quarterly if the interest rate on both accounts is $3.7%?

a. $86.40 b. $51.07

c. $36.10 d. $1.02

ANSWER: d

RATIONALE: $B = pe^{rt} = 1{,}000\,e^{0.037(5)} \approx 1{,}203.22$

$B = p\left(1 + \frac{r}{n}\right)^{nt} = 1{,}000\left(1 + \frac{0.037}{4}\right)^{5(4)} \approx \$1{,}202.20$

POINTS: 1

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

DATE CREATED: 1/25/2017 4:46 AM

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15. LaToya has $113.94 in her checking account. During the week, she goes to an ATM and withdraws $40. She is charged a usage fee of $2.50. The following week she deposits her paycheck of $189.73. She writes two checks, one for $22.50 and the other for $70.18. What is the current balance in her checking account?

a. $170.99 b. $168.49

c. $145.99 d. –$21.24

ANSWER: b

RATIONALE: 113.94 – (40 + 2.5) + 189.73 – 22.5 – 70.18 = $168.49

POINTS: 1

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

DATE CREATED: 1/25/2017 5:16 AM

DATE MODIFIED: 2/13/2017 12:32 AM

16. Conrad Savings Bank has a $50 overdraft fee. On Friday, Mr. McQuire deposited his paycheck of $468.92 for a total account balance of $712.34. The next morning, his wife wrote a check for $1,267.45 for a new refrigerator and stove. The check cleared the bank by the end of the day. What is the current balance in the McQuires' account?

a. –$798.53

b. –$605.11

c. –$555.11

d. –$405.11

ANSWER: b

RATIONALE: 712.34 – 1,267.45 – 50 = –$605.11

POINTS: 1

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

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17. Erin has a balance of $1,150.34 in her check register. On her statement, the balance of her account is $844.93. Not reported on the bank statement are deposits of $125.56, $50, and $212.34. There are outstanding checks in the amount of $15 and $78.25 and an ATM withdrawal of $40. After Erin reconciles her check register with her statement, what entry does she need to make in her register?

a. Adjusting entry of $101.76 b. Adjusting entry of –$101.76

c. Adjusting entry of $50.76 d. Adjusting entry of –$50.76

ANSWER: d

RATIONALE: Subtract the deposits from Erin's balance and add the outstanding checks. Erin's resulting balance is $895.69, which is $50.76 more than the statement. Erin needs to adjust her check register by subtracting $50.76 to balance with her statement.

POINTS: 1

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

DATE CREATED: 1/25/2017 5:59 AM

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18. Malcolm wants to make a deposit into an account that earns interest. He wants to be able to access the money on a limited basis. What type of account should he NOT consider?

a. Money market account b. Statement savings account

c. Certificate of deposit (CD) d. Savings account

ANSWER: c

RATIONALE: There are no deposits or withdrawals from a CD without penalty.

POINTS: 1

QUESTION TYPE: Multiple Choice

HAS VARIABLES: False

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19. What does the variable n represent in the formula below?

$$P = \frac{B \times \frac{r}{n}}{\left(1 + \frac{r}{n}\right)^{nt} - 1}$$

ANSWER: n is the number of times interest is compounded annually.

POINTS: 1

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

DATE CREATED: 1/25/2017 6:06 AM

DATE MODIFIED: 2/13/2017 12:37 AM

20. Amy opened a savings account with $1,750 she received for graduation. The account pays 4.3% simple interest. What is the balance after 6 months?

ANSWER: $1,787.63; $I = prt = 1{,}750 \times 0.043 \times 0.5 \approx 37.63$; $1{,}750 + 37.63 = \$1{,}787.63$

POINTS: 1

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QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:08 AM
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21. What is the interest earned on $20,000 for 5 years, at an interest rate of $3\frac{3}{5}\%$ compounded continuously?

ANSWER: $3,944.35; $B = pe^{rt} = 20{,}000\,e^{(0.036)(5)} \approx 23{,}944.35$; 23,944.35 – 20,000 = $3,944.35

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:11 AM
DATE MODIFIED: 2/13/2017 12:40 AM

22. Tammy sold a diamond ring for $10,000. She placed half of the money into a CD with a 3.9% interest rate compounded daily. She placed the other half into a CD with the same interest rate but compounded monthly. What is the difference in the interest earned on each amount after 4 years?

ANSWER: The account compounded daily earns $1.43 more.

$$B = p\left(1 + \frac{r}{n}\right)^{nt} = 5{,}000\left(1 + \frac{0.039}{365}\right)^{365(4)} \approx \$5{,}844.08;$$

$$B = p\left(1 + \frac{r}{n}\right)^{nt} = 5{,}000\left(1 + \frac{0.039}{12}\right)^{12(4)} \approx \$5{,}842.65;$$

$$\$5{,}844.08 - \$5{,}842.65 = \$1.43$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:16 AM
DATE MODIFIED: 2/13/2017 12:41 AM

23. Huong deposits $2,000 into an account that earns 4.2% interest compounded daily. What is the annual percentage yield (APY) to the nearest hundredth of a percent?

ANSWER:
$$APY = \left(1 + \frac{r}{n}\right)^{n} - 1 = \left(1 + \frac{0.042}{365}\right)^{365} - 1 \approx 4.29\%$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:21 AM
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24. Tyrone opens an account at the local bank by depositing $50 of his birthday money. He continues to deposit $50 each

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month for 5 years. If the account pays $3\frac{1}{4}\%$ interest compounded monthly, how much is in the account after 5 years?

ANSWER:
$$B = \frac{P\left(\left(1+\frac{r}{n}\right)^{nt}-1\right)}{\frac{r}{n}} = \frac{50\left(\left(1+\frac{0.0325}{12}\right)^{12(5)}-1\right)}{\frac{0.0325}{12}} \approx \$3{,}252.74$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:26 AM
DATE MODIFIED: 2/13/2017 12:56 AM

25. Carmencita is 12 years old and she is saving for a car. She wants to have $5,000 by the time she is 16 years old. She opens a savings account with an APR of 3.9% compounded weekly. How much should she deposit into her account each week to meet her goal?

ANSWER:
$$P = \frac{B \times \frac{r}{n}}{\left(1+\frac{r}{n}\right)^{nt}-1} = \frac{5{,}000 \times \frac{0.039}{52}}{\left(1+\frac{0.039}{52}\right)^{52(4)}-1} \approx \$22.22$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:29 AM
DATE MODIFIED: 2/13/2017 12:58 AM

26. Sonja and Jake just got married. They received $4,500 in gift money and deposited it into a savings account that pays 2.85% simple interest. How much will they have in savings after 3 years?

ANSWER: $4,884.75; $I = prt = 4{,}500 \times 0.0285 \times 3 = 384.75$; $384.75 + 4{,}500 = \$4{,}884.75$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:40 AM
DATE MODIFIED: 2/13/2017 12:59 AM

27. Ashley and Dwayne are saving for retirement. Their goal is to have $250,000 in 15 years. They open up an account with an APR of 3.7% compounded monthly. How much should they deposit each month to meet their goal?

ANSWER:
$$\$1{,}041.03;\ P = \frac{B \cdot \frac{r}{n}}{\left(1+\frac{r}{n}\right)^{nt}-1} = \frac{250000 \cdot \frac{0.037}{12}}{\left(1+\frac{0.037}{12}\right)^{12(15)}-1} = \$1{,}041.03$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer

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28. Edward wants to have $50,000 in 10 years for college. What single deposit would he need to make now into an account that pays 4.3% interest, compounded daily, to meet his goal?
ANSWER:

$$\$32{,}526.28;\ P = \frac{B}{\left(1+\frac{r}{n}\right)^{nt}} = \frac{50{,}000}{\left(1+\frac{0.043}{365}\right)^{365(10)}} \approx \$32{,}526.28$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:47 AM
DATE MODIFIED: 2/13/2017 1:00 AM

29. Ron and Annie have $1,239.45 in their checking account. During the week, Annie goes to an ATM and withdraws $80. The following week Ron deposits his paycheck of $689.65. Annie then pays bills online in the amounts of: $212.80, $55, $49.76, and $110.35. What is the current balance in their checking account?
ANSWER: $1,421.19; 1,239.45 + 689.65 = 1,929.10;
1,929.10 – 212.80 – 55 – 49.76 – 110.35 – 80 = $1,421.19
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:49 AM
DATE MODIFIED: 2/13/2017 1:01 AM

30. The Parsons have a balance of $3,664.47 in their check register. On their bank statement, the balance on the account is $2,346.89. Not reported on the bank statement are checks of $324.56, $25.50, $78.92, and $30.25. There are outstanding deposits in the amount of $500 and $1,456.81. There are three ATM withdrawals of $60 each. What do the Parsons need to do to reconcile their checkbook?
ANSWER: The Parsons need to do nothing because the account is balanced.
2,346.89 + 500 + 1,456.81 = 4,303.70;
4,303.70 – 3(60) – 324.56 – 25.50 – 78.92 – 30.25 = $3,664.47
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:51 AM
DATE MODIFIED: 2/13/2017 1:04 AM

31. Annalise has an online checking account at Wells Fargo Bank. Her balance at the beginning of the month was $5,000.00. During the month, she made deposits totaling $5,478.42, was charged a maintenance fee of $18, and earned $1.87 in interest. Her balance at the end of the month was $4,187.93. Annalise grew concerned because she spent considerably more than she made during the month. How much did Annalise spend during the month?
ANSWER: Annalise spent $6,274.36 during the month.
5,000.00 + 5,478.42 − 18.00 + 1.87 − 4,187.93 = 6,274.36

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DATE CREATED: 1/25/2017 6:54 AM
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32. Jericho wants to start saving to purchase a house. His goal is to save $95,000. If he deposits $56,000 into an account that pays 3.75% interest compounded daily, approximately how long will it take for his money to grow to the desired amount? Round your answer to the nearest tenth of a year.
ANSWER: Jericho needs to wait approximately 14.1 years.

$$t = \frac{\log_{(1+r/n)}\left(\frac{B}{P}\right)}{n} = \frac{\log\left(\frac{B}{P}\right)}{n \cdot \log(1+r/n)} = \frac{\log\left(\frac{95{,}000}{56{,}000}\right)}{365 \cdot \log(1+0.0375/365)} = 5{,}144.5762/365 = 14.1$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False
DATE CREATED: 1/25/2017 6:57 AM
DATE MODIFIED: 2/13/2017 1:06 AM

33. Landry deposits $10,000 into an account that compounds interest continuously at a rate of 2.375%. How long will it take his money to grow to $11,000? Round your answer to the nearest tenth of a year.
ANSWER: Landry needs to wait approximately 4.0 years.

$$t = \frac{\ln\left(\frac{B}{P}\right)}{r} = 0.09531/0.02375 = 4.013$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 7:04 AM
DATE MODIFIED: 2/13/2017 1:07 AM

34. Anne has opened up a systematic savings account into which she deposits $500 per month compounded monthly at a rate of 7.8%. How long will it take her to reach $500,000? Round your answer to the nearest tenth of a year.
ANSWER: Anne needs to wait approximately 25.9 years.

$$t = \frac{\log\left(1+\frac{Br}{Pn}\right)}{n \cdot \log(1+r/n)} = \frac{\log\left(1+\frac{500{,}000 \cdot 0.078}{500.12}\right)}{12 \cdot \log(1+0.078/12)} = 0.875061/0.033765 = 25.916$$

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HAS VARIABLES: False
DATE CREATED: 1/25/2017 7:07 AM
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35. Steve inherited $100,000 from his grandmother and deposited it into an account that compounds interest monthly at a rate of 4.9%. Each month, he withdraws $500 from the account. How long will it take him until the account has a balance of $0? Round your answer to the nearest tenth of a year.
ANSWER: Steve's account will reach $0 in about 34.7 years.

$$t = \frac{\log\left(1 - \frac{Pr}{Wn}\right)}{-1 \cdot n \cdot \log(1 + r/n)} = \frac{\log\left(1 - \frac{100{,}000 \cdot 0.049}{500.12}\right)}{-1 \cdot 12 \cdot \log(1 + 0.049/12)} = -0.736759/-0.021237 = 34.692$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/25/2017 7:14 AM
DATE MODIFIED: 2/13/2017 1:10 AM

36. Alesha wants to deposit $25,000 into an account that compounds interest. She hopes to have $40,000 in 7 years for a down payment on a house. What interest rate must she find in order to accomplish her goal? Round your answer to the nearest hundredth of a percent.
ANSWER: Alesha needs to find an investment with an APR of 6.71%.

$$r = \frac{\ln\left(\frac{B}{P}\right)}{t} = 0.470036/7 = 0.067143$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/26/2017 1:14 AM
DATE MODIFIED: 2/13/2017 1:11 AM

37. Rajesh invested $30,000 into an account that has a monthly rate of return of 0.79%. He has made arrangements to withdraw $250 automatically every month to pay off his 10-year student loan. Will Rajesh have enough money in the account to cover all of the required loan payments? If so, how long can he continue to withdraw $250 each month to put toward a car payment? (Round to the nearest year.)
ANSWER: Yes, he will pay it off in 10 years and still have two years to continue making the withdrawals.

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$$t = \frac{\log\left(1 - \frac{Pr}{Wn}\right)}{-1 \cdot n \cdot \log(1 + r/n)} = \frac{\log\left(1 - \frac{30{,}000 \cdot 0.0948}{350 \cdot 12}\right)}{-1 \cdot 12 \cdot \log(1 + 0.0948/12)} = 11.972628 \text{ years}$$

$$\text{Difference} = 11.972628 \text{ years} - 10 \text{ years} = 1.972628 \text{ years}$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/26/2017 1:18 AM
DATE MODIFIED: 2/13/2017 1:12 AM

38. Curtis deposited $10,000 into an account that compounds interest annually at a rate of 5%. He wants to know how long it will take for his money to double but doesn't have a calculator with logarithms. If he estimates the answer to his question using the Rule of 72s, and then later tries to verify his estimate with a better calculator, how many days will his estimate be off? Round your answer to the nearest day.

ANSWER: Curtis's estimate will be off by 71 days.
Rule of 72s t=72/5=14.4 years

$$t = \frac{\log_{(1+r/n)}\left(\frac{B}{P}\right)}{n} = \frac{\log\left(\frac{B}{P}\right)}{n \cdot \log(1 + r/n)} = \frac{\log\left(\frac{20{,}000}{10{,}000}\right)}{1 \cdot \log(1 + 0.05/1)} = 0.301030/0.021189 = 14.20669$$

$$\text{Difference} = 14.4 - 14.206699 = 0.193301 \text{ years} * 365 \text{ days/year} = 70.55 \text{ days}$$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 1/26/2017 1:24 AM
DATE MODIFIED: 2/13/2017 1:15 AM

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