1. Determine the amount that will result if $3500 is invested for 6 years at 10% compounded semiannually.

2. Tina received a notice from a bank that her recently deceased father had an account in her name with a balance of $55,000. Tina knows that her father opened the account 40 years ago. She also knows that the account has been paying 3.5% compounded annually. What was the amount of the original deposit?

3. Pedro plans to deposit $1,000 into an account that pays 7% compounded quarterly. How many years will he have to leave the money on deposit in order to triple his investment?

4. Shawn deposits $500 at the end of every 6 months into an account that pays 8% compounded semiannually.

a. What will be the balance in the account after 8 years?

b. How much interest will his money earn?

5. Genny has 2 years to save up enough money to go back to school full-time to complete her degree in mathematics. She has calculated that she will need $21,000 for tuition, fees, etc. How much should she invest at the end of each month into an account that pays 6% compounded monthly?

6. Latonily has calculated that the present value of an ordinary annuity is $3,662.74. If the annuity will pay $500.00 at the end of each quarter for the next 2 years and if interest rate is 8% compounded quarterly, use this table to verify (or discredit) her calculations.

Quarter	Beginning Balance	Interest	Withdrawal	Ending Balance
1				
2				
3				
4				
5				
6				
7				
8				

7. Jane has purchased a new home. She will be financing $150,000 for 20 years at 9% compounded monthly.

a. What monthly payments will Jane have in order to pay off the loan?

b. How much interest will Jane pay over the course of the loan?

8. Willie has agreed to pay off a $100,000 loan by making $23,739.64 payments at the end of the year for the next 5 years. If the interest rate is 6% compounded annually, complete this amortization table for the loan.

Year	Beginning balance	Interest	Payment	Amount applied to principle	Ending balance
1					
2					
3					
4					
5					

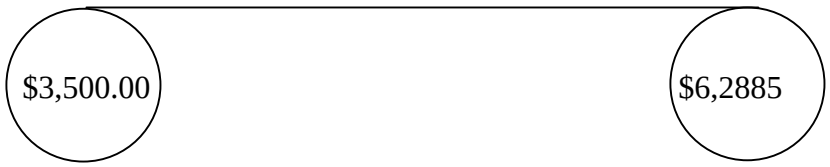
9. Brad has been paying $404.43 at the end of each month to pay off his car loan for the past two years. The interest rate for the loan is 15% compounded monthly and the term of the original loan was for 5 years. Immediately after he made the 24th payment, he plans to trade his car for a new car. What lump sum should the bank settle for in lieu of the remaining 36 payments of $404.43?

10. EXTRA CREDIT

Swandada plans to pay $300 at the end of each month into an account that pays 9% compounded monthly. Assuming that he does not make any withdrawals, how many payments will he have to make in order to reach his goal of $5000 in the account?

ANSWERS??

1. $A = P(1 + i)^n$
   $A = 3500(1.05)^{12} = 3500(1.795856326) = \$6,285.49$



2. $A = P(1 + i)^n$
   $55,000 = P(1 + .035)^{40}$
   $55000 = P(3.959259721)$
   $\frac{55000}{3.959259721} = P$
   $\$13,891.49 = P$

3. $A = P(1 + i)^n$

$3000 = 1000(1.0175)^n$

$3 = 1(1.0175)^n$

$\text{Log } 3 = n \text{ Log } 1.0175$

$.4771212547 = n(.0075344179$

$63.32556293 = n$

64 quarters or 16 years

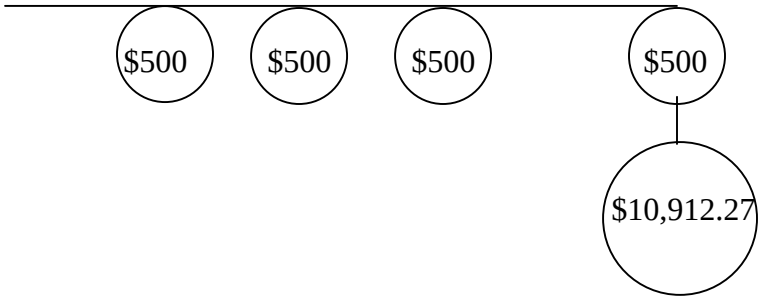
4. $R = 500$

$i = .08/2 = .04$

$n = 8 \times 2 = 16$

$$S = R\frac{(1+i)^n - 1}{i} = 500\,\frac{(1.04)^{16} - 1}{.04} = 500\,\frac{1.872981246 - 1}{.04} = 500\,\frac{.872981246}{.04} = 500(21.8253114) = \$10{,}912.27$$

Interest = Available balance – amount deposited: $10,912.27 - 500(16) = $10,912.27 - $8,000 = $2,912.27



5. $n = 2x12 = 24$

$i = .06/12 = .005$

$R = ?$

$S = 21{,}000$

$$21000 = R\frac{1.005^{24} - 1}{.005}$$

$$21000 = R\,\frac{1.127159776 - 1}{.005}$$

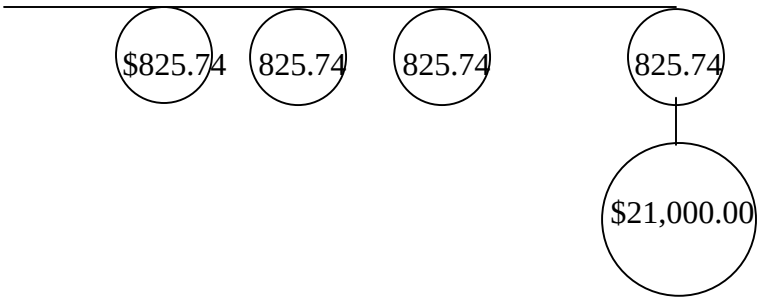
$$21000 = R\,\frac{.127159776}{.005}$$

$21000 = R\ (25.43195524)$

$$\frac{21000}{25.43195524} = R$$

825.7328153

Deposit $825.74 per month



6.

Quarter	Beginning Balance	Interest	Withdrawal	Ending Balance
1	3,662.74	73.25	500.00	3,235.99
2	3,235.99	64.71	500.00	2,800.70
3	2,800.70	56.01	500.00	2,356.71
4	2,356.71	47.13	500.00	1,903.84
5	1,903.84	38.07	500.00	1,441.91
6	1,441.91	28.83	500.00	970.74
7	970.74	19.41	500.00	490.15
8	490.15	9.80	499.95	- 0 -

7. A = $150,000
n = 20x12 = 240
I = .09/12 = .0075
R = ?

$$150000 = R\frac{1.0075^{240} - 1}{.0075(1.0075^{240})}$$

$$150000 = R\frac{6.009151524 - 1}{(.0075)(6.009151524)}$$

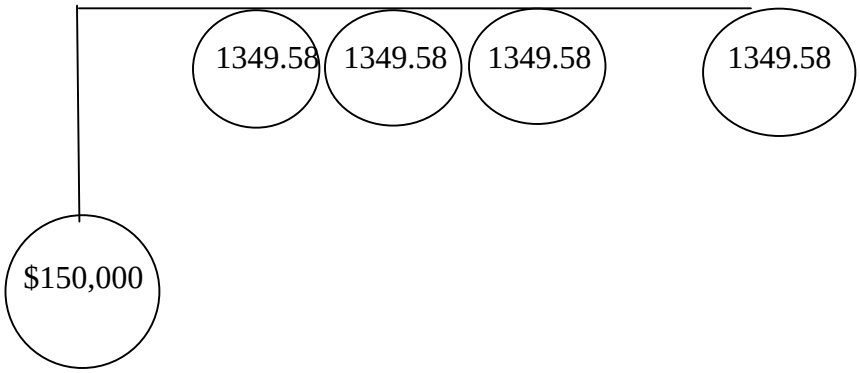
$$150000 = R\frac{5.009151524}{.0450686364}$$

$$150000 = R\,(111.1456259)$$

$$\frac{150000}{111.1456259} = R$$

$$1349.580776 = R$$

Payments of size $1,349.58 per month
b. Interest = 1,349.58(240) – 150,000 = 323,899.20 – 150,000 = $173,899.20



8.

Year	Beginning balance	Interest	Payment	Amount applied to principle	Ending balance
1	$100,000.00	$6,000.00	$23,739.64	$17,739.64	$82,260.36
2	$82,260.36	$4,935.62	$23,739.64	$18,804.02	$63,456.34
3	$63,456.34	$3,807.38	$23,739.64	$19,932.26	$43,524.08
4	$43,524.08	$2,611.44	$23,739.64	$21,128.20	$22,395.88
5	$22,395.88	$1343.75	$23,739.63	$22,395.88	- 0 0

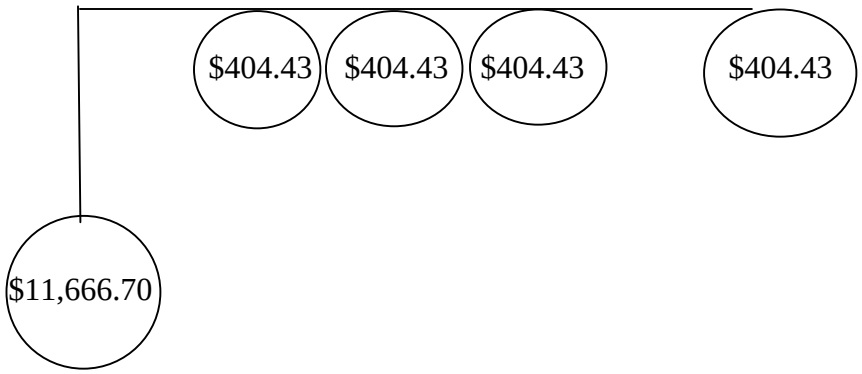
9.

$$A = 404.43 \frac{(1+.0125)^{36} - 1}{.0125(1+.0125)^{36}}$$

$$= 404.43 \frac{1.563943819 - 1}{.0125(1.563943819)}$$

$$= 404.43 (28.84726737)$$

$$= \$11,666.70$$



10. EXTRA CREDIT

S = 5000
R = 300
i = .09/12 = .0075
n = ?

$$5000 = 300 \frac{1.0075^n - 1}{.0075}$$

$$(5000)(.0075) = 300(1.0075^n - 1)$$

$$37.5 = 300(1.0075^n - 1)$$

$$\frac{37.5}{300} = (1.0075^n - 1)$$

$$.125 = 1.0075^n - 1$$

$$1 + 1.125 = 1.0075^n$$

$$1.125 = 1.0075^n$$

$$\text{Log}(1.125) = \text{Log}(1.0075^n)$$

$$.0511525224 = n\ (.00324550548$$

$$\frac{.0511525224}{.00324550548} = n$$

$$15.76 = n$$

Make payments for 16 months