In the following problems show both the formula work and fill in the TVM solver window. Circle your solution.

1a. Teri deposits $100 per month into a savings account that pays 4.45% interest compounded monthly. Determine that value of this account after 10 years.

\[ S = 100 \left[ \frac{(1 + \frac{.0445}{12})^{(12 \cdot 10)} - 1}{\frac{.0445}{12}} \right] = \$15,079.72 \]

b. How much of the money in Teri’s account after 10 years is money that she deposited?

\[ \frac{(100)(12)(10)}{} = \$12,000 \]

c. How much of the money in Teri’s account after 10 years is interest earned?

\[ \$15,079.72 - \$12,000 = \$3,079.72 \]

2. Tamika and Tim have established a sinking fund in order to have $120,000 in 17 years for their twin daughters’ college education. How much should they deposit each quarter into an account paying 6.125% interest compounded quarterly?

\[ R = \frac{120,000}{R \left[ \frac{(1 + \frac{.06125}{4})^{(4 \cdot 17)} - 1}{\frac{.06125}{4}} \right]} = \$1014.92 \]

3a. Ron Hampton is paid monthly, and $80 is automatically deducted from his pay and deposited into a savings account. If the account pays 4.8% compounded monthly, how much will be in the account after 5 years and 9 months?

\[ S = 80 \left[ \frac{(1 + \frac{.048}{12})^{(12 \cdot 5.75)} - 1}{\frac{.048}{12}} \right] = \$6342.45 \]

4. Jasspreet Kaur deposits $2435 at the end of each semiannual period for 8 years into an account paying 6% compounded semiannually. She then leaves that money alone, with no further deposits, for an additional 5 years. How much should be in her account at the end of this 13-year period.

\[ S = 2435 \left[ \frac{(1 + \frac{.06}{2})^{(2 \cdot 8)} - 1}{\frac{.06}{2}} \right] \]

at 8 yrs \( \rightarrow \) \$49,082.01
5. At the end of each quarter, 50-year old Chuck Hickman puts $1200 into a retirement account that pays 7% interest compounded quarterly. When he reaches age 60, he withdraws the entire amount and places it into a mutual fund that pays 9% interest compounded monthly. From then on, he deposits $300 into the mutual fund at the end of each month. How much is in the mutual fund account when he reaches age 65?

\[
A = P \left(1 + \frac{r}{n}\right)^{nt} = 49,082.01 \left(1 + \frac{.07}{4}\right)^{(2 \cdot 5)} = \$65,962.12
\]

\[
S = 1200 \left[ \frac{1 - \left(1 + \frac{.07}{4}\right)^{-1}}{.07/4} \right] = \$68,680.96
\]

6. To save for retirement, Karla Harby put $300 each month into an ordinary annuity for 20 years. Interest was compounded monthly. After 20 years, the annuity was worth $147,126. What nominal interest rate compounded monthly did she receive during the period of time? (Express the answer as a percentage, correct to 3 decimal places.)

\[
S = 147,126, \quad R = 300, \quad r = ?, \quad n = 12, \quad t = 20
\]

\[
147,126 = 300 \left[ \frac{\left(1 + \frac{r}{12}\right)^{(12 \cdot 20)} - 1}{r/12} \right]
\]

7. A company makes a payment of $1200 each month into a sinking fund that earns 6% compounded monthly. Determine how many months it will take (rounded up to the nearest month) for the sinking fund to rise to a value of $100,000. Use either logarithms or a graphical approach to solve this problem. A graphical solution should include a sketch, the dimensions of your window, and the coordinates of the point of intersection.

\[
100,000 = 1200 \left[ \frac{\left(1 + \frac{.06}{12}\right)^{12t} - 1}{.06/12} \right]
\]

\[
1.416 = \left(1 + \frac{.06}{12}\right)^{12t} - 1 \quad \Rightarrow \quad 1.416 = 1.005^{12t}
\]

\[
\log 1.416 = \frac{1.005^{12t}}{1.005} = 12t
\]

\[
t = 5.82 \text{ yrs. or 70 months}
\]