For problems 1–3 consider the following situation:
The Browns wish to start a college fund for their new daughter to use in 18 years. They plan to invest a lump sum in a regular savings account which compounds monthly.

1. If the Browns place $4,000 into an account that pays 8.15% interest compounded monthly how much will be in the account in 18 years?
   (a) $16,388.43; (b) $4,518.28; (c) $17,259.02; (d) $23,519.23; (e) None of these.

2. If they wish to have at least $40,000 in the account in 18 years how much must they deposit now if the account pays 8.15% interest compounded monthly?
   (a) $7,204.67; (b) $9,270.52; (c) $35,411.72; (d) $9,762.98; (e) None of these.

3. If they place $4,000 into an account now and wish to have at least $30,000 in the account in 18 years, what interest rate, compounded monthly, must they get to reach their goal?
   (a) 11.25%; (b) 14.21%; (c) 11.84%; (d) 12.75%; (e) None of these.

For problems 4–6 consider the following situation:
Homer wants to buy a car in 3 years. He plans to deposit equal payments at the end of each week into an account earning 5.8% interest compounded weekly. When he opens the account it has zero balance.

4. If Homer deposits $40 at the end of each week, how much money will he have in the account in 3 years?
   (a) $1,568.75; (b) $1,468.47; (c) $1,722.53; (d) $1,811.27; (e) None of these.

5. If Homer anticipates that he will need at least $9,000 in 3 years, how much should he deposit each week to reach this goal?
   (a) $245.15; (b) $229.48; (c) $187.36; (d) $200.09; (e) None of these.

6. If Homer anticipates that he will need $9,000 to purchase the car but he can only afford to deposit $50 at the end of each week, how long will it be before he has saved at least this amount or more?
   (a) 145 weeks; (b) 165 weeks; (c) 130 weeks; (d) 180 weeks; (e) None of these.
For problems 7–9 consider the following situation:
Kelly and Dan got a 25 year mortgage with an interest rate of 9.2% compounded quarterly.

7. If the loan was $95,000 what is their quarterly payment?
(a) $810.29; (b) $2,187.38; (c) $1,363.71; (d) $674.13; (e) None of these.

8. If the loan is for $90,000 and the quarterly payment is $2,307.45, what is their remaining debt after 10 years?
(a) $65,171.23; (b) $49,322.16; (c) $74,686.77; (d) The balance will be paid off; (e) None of these.

9. If the loan is for $90,000 and the quarterly payment is $2,307.45, after how many payments will the debt be 1/2 paid off?
(a) 117; (b) 74; (c) 100; (d) 59; (e) None of these.

For problems 10–11 consider this difference equation: $y_n = 0.6y_{n-1} - 3.5$, $y_0 = 1.5$.

10. What is the value of $y_4$ (to 3 decimals)?
(a) $-7.422$; (b) $-2.611$; (c) $-7.953$; (d) $-6.536$; (e) None of these.

11. For which value of $n$ will $y_n \leq -8.69$?
(a) 6; (b) 9; (c) 11; (d) Never; (e) None of these.

12. Which of the following best describes the graph of the difference equation $y_n = 0.99y_{n-1} - 7$, $y_0 = -3$.
(a) monotonic, repelling; (b) oscillating, repelling; (c) monotonic, attracting; (d) oscillating, attracting; (e) None of these.

13. Choose the difference equation that best describes the following situation: A mortgage of $75,000 with equal monthly payments of $393.50 and a 4.8% interest rate compounded monthly.
(a) $y_n = (1.004)y_{n-1} - 393.50$, $y_0 = 75000$; (b) $y_n = (1.048)y_{n-1} - 393.50$, $y_0 = 75000$;
(c) $y_n = 75000 - (1.048)y_{n-1}$, $y_0 = 393.50$; (d) $y_n = (1.048)y_{n-1} - 75000$, $y_0 = 393.50$;
(e) None of these.

14. Eve has $1,500 to invest for 2 years. Her bank offers two savings plans — one earns 6.25% simple interest and the other earns 6% compounded semiannually.
(a) How much interest will Eve earn if she chooses the simple interest of 6.25% for 2 years? $187.5$
(b) How much interest will Eve earn if she chooses 6% interest compounded semiannually for 2 years? $188.26$
15. Consider the difference equation \( y_n = 6y_{n-1} - 2, \ y_0 = 7. \)

(a) Find \( y_0, y_1, y_2, y_3, y_4. \) 7, 40, 238, 1426, 8554

(b) What is the solution to this difference equation? \( y_n = 0.4 + (6.6)6^n. \)