

1. Find the first five terms of the sequence: $a_1 = -3$, $a_{n+1} = a_n + 4$

2. Create a recursive rule for the sequence 5, 31, 192.2, ...

3. Consider the figures at the right. The number of blue triangles increases according to a specific pattern.

(a) Write a recursive formula for the number of blue triangles in the sequence of figures.

(b) How many blue triangles will be in the sixth figure?



4. Miguel's monthly car payment is \$234.85. The recursive formula $b_n = 1.005b_{n-1} - 234.85$ describes the balance left on the loan after n payments. Find the balance of the \$10,000 loan after each of the first eight payments.

5. Suppose a lake is populated with 10,000 gish. A year later, 80% of the fish have died or been caught, and the lake is replenished with 10,000 new fish. If the pattern continues, will the lake eventually run out of fish? If not, will the population of the lake converge to any particular value? Explain.

6. Solve the following system of equations:

$$\begin{aligned} 5x - 2y - 3z &= -7 \\ 2x - 3y + z &= -16 \\ 3x + 4y - 2z &= 7 \end{aligned}$$

Challenge: Laurie swings a pendulum. The distance traveled per swing decreases by 15% with each swing. If the pendulum initially traveled 10 inches, find the total distance traveled when the pendulum comes to a rest.

