Practice Exercises

A. Find the first 4 terms of each sequence.

1. 5, 9, 13, 17,...
2. 2, 5, 8, 11,...
3. -11, -7, -1, 7,...
4. 1, 4, 9, 16,...
5. 1, 8, 27, 64,...

B. Find the first 5 terms of the sequence given the n_{th} term.

1. $a_n = n + 4$
2. $a_n = 2n - 1$
3. $a_n = 12 - 3n$
4. $a_n = 3^n$
5. $a_n = -2^n$

C. Determine the rule that governs each sequence.

1. 5, 9, 13, 17,...
2. 2, 5, 8, 11,...

3. -11, -7, -1, 7,...
4. 1, 4, 10, 19,...
5. 1, -3, 9, -27,...
6. 1, 8, 27, 64,...
7. $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \ldots$

Problem Set

A. Find the first 5 terms of the sequence given the n_{th} term.

1. $a_n = n + 3$
2. $a_n = 3n - 1$
3. $a_n = 10 - 3n$
4. $a_n = 2^n$
5. $a_n = -3^n$

B. Determine the rule that governs each sequence.

1. 5, 10, 15, 20,...
2. -1, -7, -11, -13,...
3. -2, 4, -8, 16,...
4. 4, 1, -2, -5,...
5. 1, 8, 27, 64,...
6. $\frac{1}{3}, \frac{1}{7}, \frac{1}{11}, \frac{1}{15}, \ldots$

Problem Set

A.

1. $a_n = n + 3$

$a_1 = 1 + 3 = 4$
$a_2 = 2 + 3 = 5$
$a_3 = 3 + 3 = 6$
$a_4 = 4 + 3 = 7$
$a_5 = 5 + 3 = 8$

2. $a_n = 3n - 1$

$a_1 = 3(1) - 1 = 2$
$a_2 = 3(2) - 1 = 5$
$a_3 = 3(3) - 1 = 8$
$a_4 = 3(4) - 1 = 11$
$a_5 = 3(5) - 1 = 14$

3. $a_n = 10 - 3n$

$a_1 = 10 - 3(1) = 7$
$a_2 = 10 - 3(2) = 4$
$a_3 = 10 - 3(3) = 1$
$a_4 = 10 - 3(4) = -2$
$a_5 = 10 - 3(5) = -5$

4. $a_n = 2^n$

$a_1 = 2^1 = 2$
$a_2 = 2^2 = 4$
$a_3 = 2^3 = 8$
$a_4 = 2^4 = 16$
$a_5 = 2^5 = 32$

5. $a_n = -3^n$

$a_1 = -3^1 = -3$

$a_2 = -3^2 = 9$

$a_3 = -3^3 = -27$

$a_4 = -3^4 = 81$

$a_5 = -3^5 = -243$

B.

1. 5, 10, 15, 20,...

$a_1 = 5, d = 5, a = 5,$

$a + b = a_1$

$5 + b = 5$

$b = 0$

$a_n = an + b$

$a_n = 5n$

$\frac{2a}{2} = \frac{2}{2}$

$a = 1$

$a + b = d_1$

$1 + b = -8$

$b = -9$

$a_n = an^2 + bn + c$

$a_n = n^2 - 9n + 7$

2. -1, -7, -11, -13,...

$a_0 = 7, d_1 = -8,$

$d_2 = 2, c = 7$

$2a = d_2$

3. -2, 4, -8, 16,...

$a_n = -2^n$

4. 4, 1, -2, -5,...

$a_1 = 4, d = -3, a = -3,$

$a + b = a_1$

$-3 + b = 4$

$b = 7$

$a_n = an + b$

$a_n = -3n + 7$

5. 1, 8, 27, 64,...

$a_n = n^3$

6. $\frac{1}{3}, \frac{1}{7}, \frac{1}{11}, \frac{1}{15}, \cdots$

$a_n = \frac{1}{4n-1}$