Practice Exercises

A. Insert the specified number of geometric means.

1. Two: 3 and 81
2. Two: 16 and -2
3. Two: 2 and -250
4. Two: -3 and 24
5. One negative: 2 and 50

B. Find the missing terms of each geometric sequence.

1. 3, ____, 27
2. ____, 24, ____, ____, 3, ____
3. x, ____, x^2
4. 81, ____, ____, ____, ____, $\frac{1}{3}$

5. ____, ____, x^4, $2x^7$, ____, ____

Problem Set

A. Insert the specified number of geometric means.

1. Two: 128 and 16
2. Three: -2 and -512
3. Two: 4 and 32
4. Three: 4 and 324
5. One positive: -4 and -36

B. Find the missing terms of each geometric sequence.

1. 2, ____, ____, 54
2. ____, ____, ____, 8, 16
3. x, ____, ____, y
4. ____, ____, 9, ____, 1

5. ____, $\frac{1}{3}$, 1, ____, ____

Problem Set

A.

1. $a_1 = 128$

$a_2 = 128\left(\frac{1}{2}\right) = 64$

$a_3 = 64\left(\frac{1}{2}\right) = 32$

$a_4 = 16$

$r = \sqrt[n-k]{\frac{a_n}{a_k}}$

$r = \sqrt[4-1]{\frac{a_4}{a_1}}$

$r = \sqrt[3]{\frac{16}{128}}$

$r = \sqrt[3]{\frac{1}{8}}$

$r = \frac{1}{2}$

2. $a_1 = -2$

$a_2 = -2(4) = -8$

$a_3 = -8(4) = -32$

$a_4 = -32(4) = -128$

$a_5 = -512$

$r = \sqrt[n-k]{\frac{a_n}{a_k}}$

$$r = \sqrt[5-1]{\frac{a_5}{a_1}}$$
$$r = \sqrt[4]{\frac{-512}{-2}}$$
$$r = \sqrt[4]{256}$$
$$r = 4$$

3. $a_1 = 4$
$a_2 = 4(2) = 8$
$a_3 = 8(2) = 16$
$a_4 = 32$

$$r = \sqrt[n-k]{\frac{a_n}{a_k}}$$
$$r = \sqrt[4-1]{\frac{a_4}{a_1}}$$
$$r = \sqrt[3]{\frac{32}{4}}$$
$$r = \sqrt[3]{8}$$
$$r = 2$$

4. $a_1 = 4$
$a_2 = 4(3) = 12$
$a_3 = 12(3) = 36$
$a_4 = 36(3) = 108$
$a_5 = 324$

$$r = \sqrt[n-k]{\frac{a_n}{a_k}}$$
$$r = \sqrt[5-1]{\frac{a_5}{a_1}}$$
$$r = \sqrt[4]{\frac{324}{4}}$$

$r = \sqrt[4]{81}$
$r = 3$

5. $GM = \pm\sqrt{ab}$
$GM = \pm\sqrt{(-4)(-36)}$
$GM = 12$

B.

1. $a_1 = 2$
$a_2 = 2(3) = 6$
$a_3 = 6(3) = 18$
$a_4 = 54$

$r = \sqrt[n-k]{\frac{a_n}{a_k}}$

$r = \sqrt[4-1]{\frac{a_4}{a_1}}$
$r = \sqrt[3]{\frac{54}{2}}$
$r = \sqrt[3]{27}$
$r = 3$

2. $a_1 = 2 \div 2 = 1$
$a_2 = 4 \div 2 = 2$
$a_3 = 8 \div 2 = 4$
$a_4 = 8$
$a_5 = 16$
$r = a_5 \div a_4$
$r = 16 \div 8$
$r = 2$

3. $a_1 = x$

$$a_2 = x\left(\sqrt[3]{\frac{y}{x}}\right) = x\sqrt[3]{\frac{y}{x}}$$

$$a_3 = x\sqrt[3]{\frac{y}{x}}\left(\sqrt[3]{\frac{y}{x}}\right) = x\sqrt[3]{\frac{y}{x}^2}$$

$$a_4 = y$$

$$r = \sqrt[n-k]{\frac{a_n}{a_k}}$$

$$r = \sqrt[4-1]{\frac{a_4}{a_1}}$$

$$r = \sqrt[3]{\frac{y}{x}}$$

$$a_2 = 9 \div \frac{1}{3} = 27$$

$$a_3 = 9$$

$$a_4 = 9\left(\frac{1}{3}\right) = 3$$

$$a_5 = 1$$

$$r = \sqrt[n-k]{\frac{a_n}{a_k}}$$

$$r = \sqrt[5-3]{\frac{a_5}{a_3}}$$

$$r = \sqrt[2]{\frac{1}{9}}$$

$$r = \frac{1}{3}$$

4. $a_1 = 27 \div \frac{1}{3} = 81$

5. $a_1 = \frac{1}{3} \div 3 = \frac{1}{9}$

$a_2 = \frac{1}{3}$

$a_3 = 1$

$a_4 = 1(3) = 3$

$a_5 = 3(3) = 9$

$r = a_3 \div a_2$

$r = 1 \div \frac{1}{3}$

$r = 3$