General formula for an Arithmetic Sequence:

General formula for a Geometric Sequence:

1) Find the next three terms of each arithmetic sequence.

a) 3, 7, 11, 15, _____, _____, _____   **c)** 22, 20, 18, 16, _____, _____, _____

b) -13, -11, -9, -7, _____, _____, _____   **d)** -2, -5, -8, -11, _____, _____, _____

2) Find the next three terms of each geometric sequence.

a) 4, 8, 16, _____, _____, _____   **b)** 1, -6, 36, _____, _____, _____

c) 486, 162, 54, _____, _____, _____   **d)** 3, 15, 75, _____, _____, _____

3) Determine whether each sequence is an arithmetic sequence, a geometric sequence or neither. If it is an arithmetic or geometric sequence, determine a formula to represent the sequence.

a) 4, 7, 9, 12, …   **b)** 15, 13, 11, 9, …   **c)** 4, 12, 36, 108, …

d) 5, 10, 15, 20, …   **e)** 7, 10, 13, 16, …   **f)** 120, -60, 30, -15, ..

g) -6, -5, -3, -1, …   **h)** -13, -6, 1, 8, …   **i)** 625, 125, 25, 5, …

4) Charlie deposited $115 in a savings account. Each week thereafter, he deposits $35 into the account.

a) Write a formula to represent this sequence.

b) How much total money has Charlie deposited after 30 weeks?

5) A ball is dropped from a height of 500 meters. The table shows the height of each bounce.

BOUNCE #	HEIGHT (m)
1	400
2	320
3	256

a) Write an equation to represent the height of the ball after each bounce.

b) How high does the ball bounce on the 6th bounce?

Answers

1 a) 3, 7, 11, 15, 19, 23, 27,…   **b)** -13, -11, -9, -7, -5, -3, -1,…
  c) 22, 20, 18, 16, 14, 12, 10,… **d)** -2, -5, -8, -11, -14, -17, -20,…

2) a) 4, 8, 16, 32, 64, 128,…   **b)** 1, -6, 36, -216, 1296, -7776,…
  c) 486, 162, 54, 27, 9, 3,… **d)** 3, 15, 75, 375, 1875, 9375,…

3) a) 4, 7, 9, 12, …   neither
 b) 15, 13, 11, 9, … arithmetic $t_n = 15 + (n-1)(-2)$
c) 4, 12, 36, 108, … geometric $t_n = 4(3)^{n-1}$
d) 5, 10, 15, 20, … arithmetic $t_n = 5 + (n-1)(5)$
e) 7, 10, 13, 16, … arithmetic $t_n = 7 + (n-1)(3)$
f) 120, -60, 30, -15, ... geometric $t_n = 120(-1/2)^{n-1}$
g) -6, -5, -3, -1, … neither
h) -13, -6, 1, 8, … arithmetic $t_n = -13 + (n-1)(7)$
i) 625, 125, 25, 5, … geometric $t_n = 625(1/5)^{n-1}$

4) a) $t_n = 115 + (n-1)(35)$ **b)** $t_{30} = 1130$

5) a) $t_n = 400(0.8)^{n-1}$ **b)** $t_6 = 131.072$