Honors Algebra II Chapter 12 Worksheet Name Key

1. Identify the following as arithmetic, geometric or neither.

a) $2,10,18,26,32,\ldots$ Neither

b) $1,\frac{1}{3},\frac{1}{9},\frac{1}{27},\frac{1}{81},\ldots$ Geom

c) $1,4,9,16,25,\ldots$ Neither

2. Write the first 4 terms of the sequence.

a) $a_n = 2n-5$ $-3,-1,1,3$

b) $a_n = 4\cdot 2^{n-1}$ $4,8,16,32$

c) $a_k = \frac{6}{k}$ $6,3,2,\frac{3}{2}$

d) $a_j = 36\left(-\frac{1}{2}\right)^{j-1}$ $36,-18,9,-\frac{9}{2}$

e) $a_n = n^2-6$ $-5,-2,3,10$

f) $a_1 = 270, r = \frac{1}{3}$ $270,90,30,10$

3. Write a rule for the *nth* term of the following arithmetic sequences.

a) $a_1 = 7, d = -3$ $a_n = -3n+10$

b) $a_5 = -12, d = 2$ $a_n = 2n-22$

c) $a_{13} = -43, d = -\frac{7}{2}$ $a_n = -\frac{7}{2}n+\frac{5}{2}$

4. Write a rule for the *nth* term of the following arithmetic sequences.

a) $a_5 = 27, a_{13} = 75$ $a_n = 6n-3$

b) $a_3 = 1, a_{11} = -15$ $a_n = -2n+7$

c) $a_6 = -\frac{7}{2}, a_{13} = -7$ $a_n = -\frac{1}{2}n-\frac{1}{2}$

5. Write a rule for the *nth* term of the following geometric sequences.

a) $a_5 = 405, r = 3$ $a_n = 5(3)^{n-1}$

b) $a_4 = 16, r = 4$ $a_n = \frac{1}{4}(4)^{n-1}$

c) $a_6 = -192, r = -2$ $a_n = 6(-2)^{n-1}$

6. Write a rule for the *nth* term of the following geometric sequences.

a) $a_4 = 54, a_9 = 13{,}122$

$a_n = 2(3)^{n-1}$

b) $a_3 = 9, a_6 = \frac{1}{3}$

$a_n = 81\left(\frac{1}{3}\right)^{n-1}$

c) $a_2 = 180, a_5 = -\frac{45}{2}$

$a_n = -360\left(-\frac{1}{2}\right)^{n-1}$

7. Find the following sums, if they exist. (Some are arithmetic, some are geometric).

a) $\sum_{j=1}^{10} 4j - 2$

200

b) $\sum_{i=1}^{\infty} 8\left(\frac{2}{3}\right)^{i-1}$

24

c) $\sum_{k=1}^{9} 6(5)^{k-1}$

2,929,686

d) $\sum_{i=1}^{\infty} \left(\frac{1}{4}\right)\left(\frac{5}{4}\right)^{i-1}$

Ø

e) $\sum_{i=5}^{13} -2i + 12$

-54

f) $\sum_{n=1}^{12} 2\left(\frac{3}{2}\right)^{n-1}$

$\frac{527345}{1024} \approx 514.9853510$

8. Write the repeating decimal as a fraction.

a) $.7777\overline{7}$

$\frac{7}{9}$

b) $.818181\overline{81}$

$\frac{9}{11}$

c) $.3181818\overline{18}$

$\frac{7}{22}$

9. Solve for n.

a) $\sum_{j=1}^{n} (5 - 5j) = -50$

$n = 5$