Student: Cole Lamers **Date:** 07/06/19	**Instructor:** Kelly Galarneau **Course:** CA&T Internet (70263) Galarneau	**Assignment:** 11.3 Geometric Sequences and Series

1. Complete the following statement.

   If 5 is the common ratio of a geometric sequence with general term a_n, then $\dfrac{a_{63}}{a_{62}} =$ ____.

   If 5 is the common ratio of a geometric sequence with general term then a_n, then $\dfrac{a_{63}}{a_{62}} = \boxed{5}$.

   (Type an integer or a fraction.)

2. Complete the following statement.

   If 24 is the term immediately following the sequence term 8 in a geometric sequence, then the common ratio is _____.

   If 24 is the term immediately following the sequence term 8 in a geometric sequence, then the common ratio is $\boxed{3}$. (Type an integer or a fraction.)

3. Determine whether the following sequence is geometric. If it is, find the first term and the common ratio.

   9, 18, 36, 72,....

   Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

   ☑ **A.** The sequence is geometric with the first term $\boxed{9}$ and the common ratio $\boxed{2}$.
   (Simplify your answer.)

   ○ **B.** The sequence is not geometric.

4. Determine whether the following sequence is geometric. If it is, find the first term and the common ratio.

   4, − 16, 64, − 256, . . .

   Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

   ☑ **A.** The sequence is geometric with the first term $\boxed{4}$ and the common ratio $\boxed{-4}$.
   (Type an integer or a simplified fraction.)

   ○ **B.** The sequence is not geometric.

5. Determine whether the following sequence is geometric. If it is, find the first term and the common ratio.

   $49, \ -7, \ 1, \ -\dfrac{1}{7}, \ . . .$

   Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

   ☑ **A.** The sequence is geometric with the first term $\boxed{49}$ and the common ratio $\boxed{-\dfrac{1}{7}}$.
   (Type an integer or a simplified fraction.)

   ○ **B.** The sequence is not geometric.

6. Determine whether the following sequence is geometric. If it is, find the first term and the common ratio.

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

   Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

   ☑ **A.** The sequence is geometric with the first term $\boxed{1}$ and the common ratio $\boxed{-2}$.
   (Type an integer or a simplified fraction.)

   ○ **B.** The sequence is not geometric.

7. Determine whether the following sequence is geometric. If it is, then find the first term and the common ratio.

$$a_n = 6n^2 + 5$$

Choose the correct answer below.

  ○ **A.** The given sequence is a geometric sequence with $a_1 = 5$ and $r = 6$.

  ○ **B.** The given sequence is a geometric sequence with $a_1 = 11$ and $r = 6$.

  ✔ **C.** The given sequence is not a geometric sequence.

  ○ **D.** The given sequence is a geometric sequence with $a_1 = 11$ and $r = \dfrac{29}{11}$.

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8. Find the first term a_1, the common ratio r, and the nth term a_n for the following geometric sequence.

    5, 15, 45, 135, . . .

The first term of the sequence is $a_1 = $ 5   .
(Type an integer or a simplified fraction.)

The common ratio of the sequence is $r = $ 3   .
(Type an integer or a simplified fraction.)

The nth term of the sequence is $a_n = $ $5(3)^{n-1}$.
(Simplify your answer. Use integers or fractions for any numbers in the expression.)

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9. Find the first term a_1, the common ratio r, and the nth term a_n for the following geometric sequence.

    $\pi^7, \pi^{12}, \pi^{17}, \pi^{22}, \ldots$

The first term of the sequence is $a_1 = $ π^7 .
(Type an exact answer, using π as needed.)

The common ratio of the sequence is $r = $ π^5 .
(Type an exact answer, using π as needed.)

The nth term of the sequence is $a_n = $ π^{5n+2} .
(Type an exact answer, using π as needed.)

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10. Use the formula for the general term (the nth term) of a geometric sequence to find the indicated term of each sequence with the given first term, a_1, and common ratio, r.

    Find a_6 when $a_1 = 3$, $r = -3$

$a_6 = $ -729

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11. Use the formula for the general term (the nth term) of a geometric sequence to find the indicated term of each sequence with the given first term, a_1, and common ratio, r.

    Find a_9 when $a_1 = 8$, $r = -2$

$a_9 = $ 2048

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12. Find the indicated sum. Use the formula for the sum of the first n terms of a geometric sequence.

$$\sum_{i=1}^{5} \left(\frac{2}{3}\right)^{i+1}$$

$$\sum_{i=1}^{5} \left(\frac{2}{3}\right)^{i+1} = \frac{844}{729}$$ (Type an integer or a simplified fraction.)

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13. Find the sum of the infinite geometric series.

$$1 + \frac{1}{9} + \frac{1}{81} + \frac{1}{729} + \cdots$$

Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

✔ **A.** The sum of the series is S = $\boxed{\dfrac{9}{8}}$. (Type an integer or a simplified fraction.)

○ **B.** The series does not have a sum.

14. Find the sum of the following infinite geometric series.

$$\frac{1}{2} - \frac{1}{4} + \frac{1}{8} - \cdots$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

✔ **A.** The sum of the series is S = $\boxed{\dfrac{1}{3}}$ (Type an integer or a simplified fraction.)

○ **B.** The series does not have a sum.

15. Find the sum of the infinite geometric series.

$$\sum_{n=0}^{\infty} 2\left(\frac{1}{5}\right)^n$$

Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

✔ **A.** The sum of the series is S = $\boxed{\dfrac{5}{2}}$. (Type an integer or a simplified fraction.)

○ **B.** The series does not have a sum.

16. Watch the video and then solve the problem given below.

Click here to watch the video.[1]

For the geometric sequence 2, 6, 18, 54, ..., find a_n.

Choose the correct answer below.

✔ **A.** $a_n = 2 \cdot 3^{n-1}$

○ **B.** $a_n = 6^{n-1}$

○ **C.** $a_n = 2 \cdot 3^n$

○ **D.** $a_n = 6^n$

1: http://mediaplayer.pearsoncmg.com/assets/P_c8J0UiPQs9TVKOitMYak_86MVnMyGY?clip=3

17. Watch the video and then solve the problem given below.

Click here to watch the video.[2]

Find the sum $\sum_{i=1}^{10} 4(1.1)^i$.

$\sum_{i=1}^{10} 4(1.1)^i \approx$ $\boxed{70.12}$ (Type an integer or decimal rounded to two decimal places as needed.)

2: http://mediaplayer.pearsoncmg.com/assets/P_c8J0UiPQs9TVKOitMYak_86MVnMyGY?clip=5

18. Watch the video and then solve the problem given below.

Click here to watch the video.[3]

Find the sum $6 + 4 + \dfrac{8}{3} + \cdots$.

$6 + 4 + \dfrac{8}{3} + \cdots = $ ___18___ (Simplify your answer.)

3: http://mediaplayer.pearsoncmg.com/assets/P_c8J0UiPQs9TVKOitMYak_86MVnMyGY?clip=7