Name:

Date:

Infinite Geometric Series

Determine if each geometric series converges or diverges.

1) $2, 6, 18, 54, 162, 486, 1458, \ldots$

2) $81, 27, 9, 3, 1, \ldots$

3) $6, -12, 24, -48, 96, -192, 384, \ldots$

4) $\frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \frac{32}{243}, \ldots$

5) $a_1 = 3,\ r = \frac{2}{5}$

6) $\frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \frac{32}{243}, \ldots$

Evaluate each infinite geometric series described.

7) $a_1 = 3\ ,\ r = \frac{2}{5}$

8) $a_1 = \frac{1}{2}\ ,\ r = -2$

9) $\sum_{i=0}^{\infty} \frac{1}{2}(\frac{1}{2})^i$

10) $81, 27, 9, 3, 1, \ldots$

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Infinite Geometric Series

Answers

Determine if each geometric series converges or diverges.

1) $2, 6, 18, 54, 162, 486, 1458, \ldots \Rightarrow Diverge$

2) $81, 27, 9, 3, 1, \ldots \Rightarrow Converges$

3) $6, -12, 24, -48, 96, -192, 384, \ldots \Rightarrow Diverges$

4) $\frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \frac{32}{243}, \ldots \Rightarrow Converges$

5) $a_1 = 3,\ r = \frac{2}{5} \Rightarrow Converges$

6) $\frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \frac{32}{243}, \ldots \Rightarrow Converges$

Evaluate each infinite geometric series described.

7) $a_1 = 3\ ,\ r = \frac{2}{5} \Rightarrow s_n = 5$

8) $a_1 = \frac{1}{2}\ ,\ r = -2 \Rightarrow No\ sum$

9) $\sum_{i=0}^{\infty} \frac{1}{2}(\frac{1}{2})^i \Rightarrow s_n = 1$

10) $81, 27, 9, 3, 1, \ldots \Rightarrow s_n = 121.5$