

Find the sum of each infinite geometric series, if it exists.

1.  $18 - 9 + 4\frac{1}{2} - 2\frac{1}{4} + \dots$

2.  $\frac{2}{9} + \frac{5}{27} + \frac{25}{162} + \dots$

3.  $6 - 12 + 24 - 48 + \dots$

4.  $15 + 10 + 6\frac{2}{3} + \dots$

5.  $a_1 = 6, r = \frac{2}{5}$

6.  $\frac{4}{15} + \frac{4}{9} + \frac{20}{27} + \frac{100}{81} + \dots$

7.  $\sum_{i=0}^{\infty} \left(-\frac{3}{7}\right)^i$

8.  $a_1 = 50, r = \frac{2}{5}$

Find the first three terms of each geometric series.

9.  $S = 48, r = -\frac{2}{3}$

10.  $S = \frac{33}{4}, r = \frac{1}{3}$

Express each decimal as a rational number of the form  $\frac{a}{b}$ .

11.  $0.\overline{36}$

12.  $0.2\overline{8}$

13.  $0.6\overline{41}$