Calculus 2 Workbook

Geometric series

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GEOMETRIC SERIES TEST

■ 1. Use the geometric series test to say whether the geometric series converges or diverges, then give the value of the common ratio r.

$$\sum_{n=1}^{\infty} 6\left(\frac{2}{3}\right)^{n-1}$$

■ 2. Use the geometric series test to say whether the geometric series converges or diverges, then give the value of the common ratio r.

$$\sum_{n=1}^{\infty} \left(\frac{3}{7}\right)^{n-1}$$

■ 3. Use the geometric series test to say whether the geometric series converges or diverges, then give the value of the common ratio r.

$$\frac{\pi}{2} + \frac{\pi^2}{6} + \frac{\pi^3}{18} + \frac{\pi^4}{54} + \cdots$$

■ 4. Use the geometric series test to say whether the geometric series converges or diverges, then give the value of the common ratio r.

$$1-\frac{1}{3}+\frac{1}{9}-\frac{1}{27}+\cdots+\left(-\frac{1}{3}\right)^{n-1}+\cdots$$

■ 5. Use the geometric series test to say whether the geometric series converges or diverges, then give the value of the common ratio r.

$$\sum_{n=1}^{\infty}\left(\frac{e}{\pi}\right)^{n}$$

SUM OF THE GEOMETRIC SERIES

1. Find the sum of the geometric series.

$$\sum_{n=1}^{\infty} 7\left(\frac{3}{8}\right)^{n-1}$$

2. Find the sum of the geometric series.

$$\sum_{n=1}^{\infty} 9\left(\frac{5}{14}\right)^{n-1}$$

3. Find the sum of the geometric series.

$$\frac{1}{3} - \frac{2}{9} + \frac{4}{27} - \frac{8}{81} + \cdots$$

4. Find the sum of the geometric series.

$$\sum_{n=1}^{\infty} \left(\frac{e}{\pi}\right)^{n}$$

VALUES FOR WHICH THE SERIES CONVERGES

■ 1. Find the values of x for which the geometric series converges.

$$\sum_{n=1}^{\infty} \frac{17}{3} x^{n-1}$$

■ 2. Find the values of x for which the geometric series converges.

$$\sum_{n=1}^{\infty} 5\left(\frac{x-2}{3}\right)^{n-1}$$

■ 3. Find the values of x for which the geometric series converges.

$$\sum_{n=0}^{\infty} 4^n x^n$$

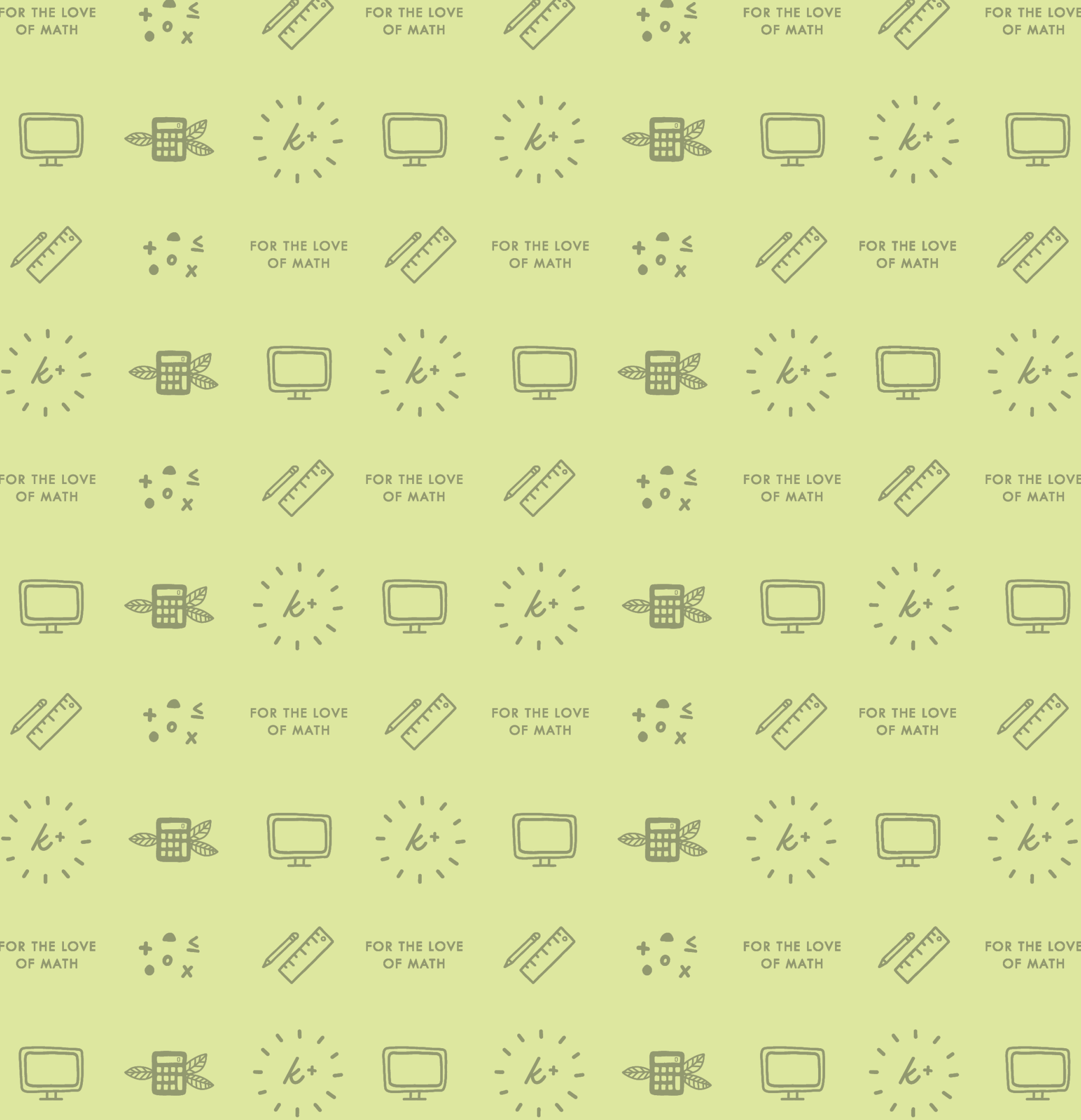
GEOMETRIC SERIES FOR REPEATING DECIMALS

1. Express the repeating decimal $0.\overline{17}$ as a geometric series.

2. Express the repeating decimal $23.\overline{23}$ as a geometric series.

3. Express the repeating decimal $6.7\overline{2}$ as a geometric series.

4. Express the repeating decimal $9.15\overline{65}$ as a geometric series.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