

Name : _____

Convergence & Divergence

Sheet 1

Determine whether each geometric series converges or diverges.

1) $13 + 52 + 208 + 832 + \dots$

2) $1 + 0.5 + 0.25 + 0.125 + \dots$

3) $-2.3 - 0.46 - 0.092 - 0.0184 - \dots$

4) $\frac{7}{2} + \frac{7}{10} + \frac{7}{50} + \frac{7}{250} + \dots$

5) $-3 + 24 - 192 + 1536 - \dots$

6) $-7 - \frac{14}{\sqrt{3}} - \frac{28}{3} - \frac{56}{3\sqrt{3}} - \dots$

7) $\frac{1}{3} - \frac{1}{2} - \frac{3}{4} - \frac{9}{8} - \dots$

8) $20 + 6 + 1.8 + 0.54 + \dots$

Convergence & Divergence

Determine whether each geometric series converges or diverges.

1) $13 + 52 + 208 + 832 + \dots$

$$r = 4; |r| \geq 1$$

The series diverges

2) $1 + 0.5 + 0.25 + 0.125 + \dots$

$$r = 0.5; |r| < 1$$

The series converges

3) $-2.3 - 0.46 - 0.092 - 0.0184 - \dots$

$$r = 0.2; |r| < 1$$

The series converges

4) $\frac{7}{2} + \frac{7}{10} + \frac{7}{50} + \frac{7}{250} + \dots$

$$r = \frac{1}{5}; |r| < 1$$

The series converges

5) $-3 + 24 - 192 + 1536 - \dots$

$$r = -8; |r| \geq 1$$

The series diverges

6) $-7 - \frac{14}{\sqrt{3}} - \frac{28}{3} - \frac{56}{3\sqrt{3}} - \dots$

$$r = \frac{2}{\sqrt{3}}; |r| \geq 1$$

The series diverges

7) $\frac{1}{3} - \frac{1}{2} - \frac{3}{4} - \frac{9}{8} - \dots$

$$r = \frac{3}{2}; |r| \geq 1$$

The series diverges

8) $20 + 6 + 1.8 + 0.54 + \dots$

$$r = 0.3; |r| < 1$$

The series converges