NAME _____ DATE _____ PERIOD _____

Practice

Infinite Sequence and Series

Find each limit, or state that the limit does not exist and explain your reasoning.

1. $\lim_{n\to\infty} \frac{n^2-1}{n^2+1}$

2. $\lim_{n\to\infty} \frac{4n^2-5n}{3n^2+4}$

3. $\lim_{n\to\infty} \frac{5n^2+1}{6n}$

4. $\lim_{n\to\infty} \frac{(n-1)(3n+1)}{5n^2}$

5. $\lim_{n\to\infty} \frac{3n-(-1)^n}{4n^2}$

6. $\lim_{n\to\infty} \frac{n^3+1}{n^2}$

Write each repeating decimal as a fraction.

7. $0.\overline{75}$

8. $0.\overline{592}$

Find the sum of each infinite series, or state that the sum does not exist and explain your reasoning.

9. $\frac{2}{5}+\frac{6}{25}+\frac{18}{125}+\cdots$

10. $\frac{3}{4}+\frac{15}{8}+\frac{75}{16}+\cdots$

11. ***Physics*** A tennis ball is dropped from a height of 55 feet and bounces $\frac{3}{5}$ of the distance after each fall.

a. Find the first seven terms of the infinite series representing the vertical distances traveled by the ball.

b. What is the total vertical distance the ball travels before coming to rest?