

Name: _____

Quiz #9

In class. 25 minutes. No textbook or notes or calculator. 30 points total.

1. Determine, with appropriate explanation, whether the sequence converges or diverges. If it converges, find the limit.

(a) (5 pts)

$$a_n = \sqrt{\frac{1 + 4n^2}{1 + n^2}}$$

(b) (5 pts)

$$a_n = \frac{n^4}{n^3 - 2n}$$

(c) (5 pts)

$$a_n = \frac{(-1)^n}{2\sqrt{n}}$$

2. (5 pts) Find, and simplify as far as possible, the first three partial sums of the series.

$$\sum_{n=1}^{\infty} \frac{1}{n^2 + 1}$$

3. Determine whether the geometric series is convergent or divergent. If convergent, find its sum.

- (a) (5 pts)

$$10 - 2 + 0.4 - 0.08 + \dots$$

- (b) (5 pts)

$$\sum_{n=1}^{\infty} \frac{5}{\pi^n}$$