Name: _____ Section: _____

Answer all questions and show your work. Unsupported answers may receive *no credit*. You may not use a calculator on this quiz. Allow 15 minutes for the quiz.

1. For each of the series apply the ratio test and state if the series converges, diverges or if the ratio test gives no information.

   (a) (3 points) $\displaystyle\sum_{n=1}^{\infty} \frac{2^n}{n!}$.

   (b) (3 points) $\displaystyle\sum_{n=1}^{\infty} \frac{2^n}{n^{12}}$.

2. (4 points) Use the formula for the sum of a geometric series $\displaystyle\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}$ to find a power series which equals $\dfrac{1}{1+x^2}$ for x in an interval containing 0.

   Write the terms involving x^n for $0 \le n \le 4$ without using summation notation.