Project Based Math 112, Fall 2001
Activity §8.5 — Intervals of Convergence of Power Series

1. Consider the power series $\sum_{n=1}^{\infty} n^p x^n$, where p is a positive, real number.

   (a) Find the radius of convergence.

   (b) Find expressions for the two series at the endpoints of the interval of convergence.

   (c) Determine whether the series in part (b) converge.

   (d) What is the interval of convergence?

2. Consider the power series $\sum_{n=1}^{\infty} \frac{x^n}{n^p}$, where p is a positive, real number.

   (a) Find the radius of convergence.

   (b) Find expressions for the two series at the endpoints of the interval of convergence.

   (c) Determine whether the series in part (b) converge. (hint: the answer depends on p).

   (d) What is the interval of convergence?