GROUP WORK 3, SECTION 12.8

Intervals of Convergence

1. Consider the power series $\sum_{n=1}^{\infty} \frac{x^n}{\sqrt{n}}$.

(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 $\sum_{n=1}^{\infty} n^n x^n$.

(a) Write each term of the series in the form $(b_n)^n$. What is b_n?

(b) Let x be any fixed positive number. What can we say about b_n and $(b_n)^n$ as $n \to \infty$?

(c) What does part (b) tell us about the convergence or divergence of $\sum_{n=1}^{\infty} n^n x^n$?

(d) Compute the radius and interval of convergence of $\sum_{n=1}^{\infty} n^n x^n$.