Power Series

Solutions should show all of your work, not just a single final answer.

1. Define a power series centered at a number a and its radius and interval of convergence.

2. Determine the radius of convergence and interval of convergence for the following power series. Indicate each convergence test you use. When determining the interval of convergence, don't forget the *endpoints*.

   (a) $\displaystyle\sum_{n=0}^{\infty} 7^{n+1}x^n$

   (b) $\displaystyle\sum_{n=0}^{\infty} 7^{n+1}x^{2n}$

   (c) $\displaystyle\sum_{n=1}^{\infty} \frac{(x-2)^n}{n^2}$

   (d) $\displaystyle\sum_{n=0}^{\infty} \frac{x^n}{(2n+1)!}$

3. T/F (with justification)

   If $\displaystyle\sum_{n=0}^{\infty} c_n$ converges then $\displaystyle\sum_{n=0}^{\infty} c_n x^n$ converges when $|x| < 1$.