1. Find the radius of convergence of:

$$\sum_{n=1}^{\infty} \frac{z^{2n}}{4^n}.$$

   Find the analytic function represented by this power series.

2. Arfken, section 11.5, page 496–497, problems 11.5.7 and 11.5.8.

3. Find the Laurent expansion of $f(z) = z(z^2 + 1)^{-1}$ about $z_0 = i$ and state the maximal annular region on which the expansion is valid.