1. Determine the radius of convergence of $\sum_{n=1}^{\infty} \frac{(z+1)^n}{(n+5)^3 3^n}$.

2. Determine the sum of the series $\sum_{n=1}^{\infty} n^2 z^n$ for $|z| < 1$. (Hint: start with the series for $1/(1-z)$.)

3. Determine the radius of convergence of the Taylor series for

   (a) $\frac{\sin z}{z^2+4}$ about $z = 0$.

   (b) $\frac{e^z}{z^2 - z}$ about $z = 4i$.

4. Determine the Taylor series for $f(z) = \sinh(z)\cosh(z)$ about $z = 0$ and state the radius of convergence.

5. Find a Laurent series expansion of $\frac{3z-3}{(2z-1)(z-2)}$ on $1/2 < |z-1| < 1$.

6. Find a Laurent series expansion of $\frac{e^{(z^2)}}{z^3}$ about $z = 0$.