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Assignment 5 - Series
Due February 26th

1. Evaluate the following sums:
   a) (0.5 pts) $\sum_{n=2}^{\infty} \frac{(1+i)^n}{(2+i)^n}$
   b) (0.5 pts) $\sum_{n=0}^{\infty} \frac{(1+i)^{n+2}}{(2+i)^n}$
   c) (0.5 pts) $\sum_{n=2}^{\infty} \frac{(1+i)^n}{(2+i)^{n+2}}$
2. Show that the following are convergent:
   a) (0.5 pts) $\sum_{n=1}^{\infty} n^2 z^n$ where $|z| < 1$
   b) (0.5 pts) $\sum_{n=1}^{\infty} \frac{i^n}{n^2}$
   c) (0.5 pts) $\sum_{n=1}^{\infty} \frac{(1+i)^n}{n!}$
   d) (1 pt) $\sum_{n=1}^{\infty} \frac{i^n}{n}$
3. Show that the following are divergent:
   a) (0.5 pts) $\sum_{n=1}^{\infty} n^2 z^n$ where $|z| > 1$
   b) (0.5 pts) $\sum_{n=1}^{\infty} \frac{i^n}{\cos n}$