HW 17: Section 8.1 and 8.2

Due: Thursday, November 14th in SQRC by 9pm

Learning Goals:

- Determine if a sequence converges or diverges.
- Understand when geometric series converge and what they converge to.
- Determine if a series converges or diverges.

Questions:

1. Problem 8.1.16 Determine whether or not the sequence $a_n = (-1)^n \frac{n+4}{n+1}$ converges or diverges.
2. Problem 8.1.32 Determine whether or not the sequence $a_n = \frac{\cos(\pi n)}{n^2}$ converges or diverges.
3. Problem 8.2.4 Determine whether the series $\sum_{k=1}^{\infty} 4\left(\frac{1}{2}\right)^k$ converges or diverges. If it converges, find the sum of the series.
4. Problem 8.2.6 Determine whether the series $\sum_{k=3}^{\infty} (-1)^k \frac{3}{2^k}$ converges or diverges. If it converges, find the sum of the series.(be careful about the starting value for the sum!)
5. Problem 8.2.12 Determine whether the series $\sum_{k=1}^{\infty} \frac{4}{k+1}$ converges or diverges. If it converges, find the sum of the series.
6. Problem 8.2.16 Determine whether the series $\sum_{k=1}^{\infty} 3^{1/k}$ converges or diverges. If it converges, find the sum of the series.
7. Problem 8.2.26 Determine all value of c for which the series $\sum_{k=1}^{\infty} \frac{2}{(x-3)^k}$ converges.
8. Problem 8.2.32 Use graphical or numerical evidence to conjecture the convergence of divergence of the series $\sum_{k=1}^{\infty} \frac{2^k}{k!}$.