Evaluate each series or explain why it does not converge. In each problem, use a calculator to compute some partial sums of the series and compare with your results about convergence. (Well, in one of them you can’t – which one?)

1. \[ \sum_{i=1}^{\infty} 2i \]

2. \[ \sum_{i=0}^{\infty} \frac{1}{2^i} \]

3. \[ \sum_{i=3}^{\infty} \frac{1}{2i} \]

4. \[ \sum_{n=1}^{\infty} \frac{n^2}{n^2 + 1} \]
   Hint: look at the limit of the sequence of terms of the series.

5. \[ \sum_{n=1}^{\infty} \frac{1}{2n} \]

6. \[ \sum_{n=1}^{\infty} \frac{1}{(n + 1)(n + 2)} \]
   Hint: this and the following problem involve telescoping.
7. \[
\sum_{n=1}^{\infty} \frac{2}{(n + 1)(n + 3)}
\]

8. \[
\sum_{n=0}^{\infty} \frac{3}{2^n} - \frac{4}{3^n}
\]

9. \[
\sum_{i=0}^{\infty} (1.01)^i
\]

10. \[
\sum_{i=0}^{\infty} \frac{1}{3^n}
\]

Hint: there is not a typo in this question.