Preface

Here are a set of problems for my Calculus I notes. These problems do not have any solutions available on this site. These are intended mostly for instructors who might want a set of problems to assign for turning in. I try to put up both practice problems (with solutions available) and these problems at the same time so that both will be available to anyone who wishes to use them.

Series – The Basics

For problems 1 – 4 perform an index shift so that the series starts at \( n = 4 \).

1. \[ \sum_{n=8}^{\infty} \frac{2+n}{5-n} \]

2. \[ \sum_{n=2}^{\infty} \frac{3^{n+2}}{1-4^{3n+1}} \]

3. \[ \sum_{n=0}^{\infty} (-2)^{2-n} e^{3n} \]

4. \[ \sum_{n=5}^{\infty} \frac{(-1)^{3+n} n^2}{n^3 - 2n + 1} \]

5. Strip out the first 4 terms from the series \( \sum_{n=0}^{\infty} 3^n 6^{2-n} \).

6. Strip out the first 2 terms from the series \( \sum_{n=3}^{\infty} \frac{4}{n^2 + n + 1} \).

7. Given that \( \sum_{n=4}^{\infty} n 4^{-n} = 0.02257 \) determine the value of \( \sum_{n=1}^{\infty} n 4^{-n} \).

8. Given that \( \sum_{n=3}^{\infty} \frac{n+1}{n^3} = 0.47199 \) determine the value of \( \sum_{n=5}^{\infty} \frac{n+1}{n^3} \).