

Work-It-Out Day 11: Sections 10.1 and 10.2  
Math 142 - Spring 2016

1. Determine the limit of the sequence  $\{a_n\}$  if it converges, or show that it diverges:

$$a_n = \left(\frac{3}{8}\right)^{-n}$$

2. Determine the limit of the sequence  $\{a_n\}$  if it converges, or show that it diverges, if

$$a_n = \frac{n}{2} \ln\left(\frac{1}{n}\right)$$

3. Determine the limit of the sequence  $\{a_n\}$  if it converges or show that it diverges:

$$a_n = \frac{5^n - 3}{8^n}$$

4. Compute the following partial sums for the series:

$$\sum_{i=1}^{\infty} \frac{(-1)^i i^2}{i^3 + 1}.$$

$$S_1 =$$

$$S_2 =$$

$$S_3 =$$

5. Determine whether the series  $\sum_{n=1}^{\infty} \frac{5^n - 3}{8^n}$  converges or diverges. If it converges, find the sum.

6. Find the value of the sum:  $3 - \frac{6}{5} + \frac{12}{25} - \frac{24}{125} + \dots$