

MATH 152, Fall 2019

Worksheet 7

1. Determine by comparison if the following series is convergent or divergent.

$$\sum_{n=1}^{\infty} \frac{n^3}{n^5 + 3}$$

2. For what values of  $p$  does the series

$$\sum_{n=1}^{\infty} \frac{n^p}{2 + n^3}$$

is convergent ?

3. Does the series

$$\sum_{n=1}^{\infty} \frac{n + 5}{n\sqrt{n + 3}}$$

converge or diverge?

4. We would like to estimate the sum of the series  $\sum_{n=1}^{\infty} \frac{1}{n^4 + 1}$  by using the sum of the first ten terms. Of course, the exact error is the sum of all the terms from the 11th on, i.e.,  $\sum_{n=11}^{\infty} \frac{1}{n^4 + 1}$ . Estimate this error, by estimating this latter sum using an appropriate integral.

5. Does the series

$$\sum_{n=1}^{\infty} \frac{k \sin^2}{1 + k^3}$$

converge or diverge?

6. Determine whether the series

$$\sum_{n=1}^{\infty} \frac{1}{\sqrt[3]{3n^4 + 1}}$$

converge or diverge.