AMS 161-Practice Exam 1-Fall 2018

NAME:_____

∗Each numbered question is worth 20% of the exam. SHOW ALL WORK!

1. Determine if each converges or diverges. Justify your answer!

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

b) $\sum_{n=1}^{\infty} \frac{3^n}{n!}$

c) $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n+1}}$

d) $\sum_{n=1}^{\infty} \frac{(-1)^n}{n}$

2. Find the interval of convergence for $\sum_{n=1}^{\infty} \frac{(5x)^n}{\sqrt{n}}$

3. Find the Maclaurin series for $\ln(1-x)$ and use the ratio test to determine the interval of convergence. Check endpoints too!

4. Write a Maclaurin series for e^{3x} and determine its interval of convergence using the ratio test.

5.Write an infinite geometric series in sigma notation whose first term is 3 and converges to 4.