AMS 161
THURSDAY MIDTERM
FALL 2021

NAME: _____

Each question is worth 10 points.

1. Write the third degree Maclaurin Polynomial for: f(x) = $\frac{1}{\sqrt{2x+1}}$ Simplify coefficients.

2. Prove that $\sum_{n=2}^{\infty} \frac{1}{n(lnn)^p}$ converges for p > 1 using the integral test. Fully justify your answer.

3. Find the Maclaurin Series for f(x) = $\frac{1}{1-x^2}$ and find the radius of convergence.

4. Find the antiderivative of cos(9x) using power series and find the radius of convergence for your answer.

5. Converge or diverge and justify your answer:

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