

# MAT 132- Practice Exam 2-Spring 2019

NAME: \_\_\_\_\_

\*Each numbered question is worth 25 points. SHOW ALL WORK!

1. Determine if each converges or diverges and justify:

a)  $\sum_{n=1}^{\infty} ne^{-n^2}$

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

$$\text{c) } \sum_{n=2}^{\infty} \frac{(\ln n)^2}{n}$$

$$\text{d) } \sum_{n=1}^{\infty} \frac{1}{\text{Arc tan } n}$$

$$\text{e) } \sum_{n=1}^{\infty} \frac{1}{\sqrt[3]{n^5}}$$

2. Find the interval of convergence and corresponding sum:  $\sum_{n=0}^{\infty} \frac{(4x)^n}{(3)^n}$

3. Find the sum:  $\sum_{n=1}^{\infty} \left( \frac{1}{n^2+4n+3} + \frac{1}{3^n} \right)$

4) Determine if the following series converge and justify your answer:

$$\sum_{n=2}^{\infty} \frac{2^n n}{n!}$$

$$\sum_{n=2}^{\infty} \frac{(-1)^n}{\ln n}$$

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