

LAST NAME:

FIRST NAME:

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**MATH 65B - Spring 2018**

Groupwork 12: May 1, 2018

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1. Use the Ratio Test to determine whether the series converges or diverges.

(a) 
$$\sum_{n=1}^{\infty} n!e^{-n}$$

(b) 
$$\sum_{n=1}^{\infty} \frac{n2^n(n+1)!}{3^n n!}$$

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Please, show all work.

2. Use the Root Test to determine whether the series converges or diverges.

$$(a) \quad \sum_{n=2}^{\infty} \frac{n}{(\ln(n))^{\frac{n}{2}}}$$

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

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Please, show all work.

3. Determine whether the series converges or diverges.

$$(a) \quad \sum_{n=1}^{\infty} (-1)^n \frac{n}{n^2 + 1}$$

$$(b) \quad \sum_{n=1}^{\infty} \frac{\cos(n\pi)}{n^{\frac{3}{4}}}$$

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Please, show all work.

4. Determine whether the series converges or diverges.

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

$$(b) \quad \sum_{n=1}^{\infty} \frac{(-1)^n \arctan(n)}{n^2}$$

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Please, show all work.