

RATIO AND ROOT TESTS

BLAKE FARMAN

Lafayette College

Name: _____

Determine whether the following series converge or diverge.

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

2. $\sum_{k=1}^{\infty} \frac{1}{k!}$

$$3. \sum_{n=1}^{\infty} \frac{10^n}{(n+1)4^{2n+1}}$$

$$4. \sum_{n=1}^{\infty} \left(\frac{n^2 + 1}{2n^2 + 1} \right)^n$$

$$5. \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{(\ln(n))^n}$$

$$6. \sum_{n=1}^{\infty} \left(1 + \frac{1}{n}\right)^{n^2}$$