

- Assignment 9 due on March 25
- Today: Integral test & comparison tests for series
- Wednesday: Alternating series
 - **Watch video 13.13** – it will be familiar!
 - Supplementary video: 13.14

For which values of $a \in \mathbb{R}$ are these series convergent?

1.
$$\sum_n^{\infty} \frac{1}{a^n}$$

3.
$$\sum_n^{\infty} a^n$$

2.
$$\sum_n^{\infty} \frac{1}{n^a}$$

4.
$$\sum_n^{\infty} n^a$$

Quick comparisons: convergent or divergent?

$$1. \sum_n^{\infty} \frac{n+1}{n^2+1}$$

$$3. \sum_n^{\infty} \frac{\sqrt{n}+1}{n^2+1}$$

$$2. \sum_n^{\infty} \frac{n^2+3n}{n^4+5n+1}$$

$$4. \sum_n^{\infty} \frac{\sqrt[3]{n^2+1}+1}{\sqrt{n^3+n}+n+1}$$

Slow comparisons: convergent or divergent?

$$1. \sum_n \frac{2^n - 40}{3^n - 20}$$

$$4. \sum_n \frac{1}{n(\ln n)^3}$$

$$2. \sum_n \frac{(\ln n)^{20}}{n^{1.1}}$$

$$5. \sum_n \frac{1}{n \ln n}$$

$$3. \sum_n \sin^2 \frac{1}{n}$$

$$6. \sum_n e^{-n^2}$$