MAT137 - Calculus with proofs

- Test 5 opens on April 22

- Today: More applications
- Last class on Monday (no videos)

- Please fill out course evaluations

Limits

Use Maclaurin series to compute these limits:

1. $\displaystyle\lim_{x\to 0} \frac{\sin x - x + \frac{x^3}{6}}{x^5}$

2. $\displaystyle\lim_{x\to 0} \frac{\cos(2x) - e^{-2x^2}}{x^4}$

3. $\displaystyle\lim_{x\to 0} \frac{[\sin x - x]^3 x}{[\cos x - 1]^4 [e^x - 1]^2}$

Estimations

I want to estimate these two numbers

$$A = \sin 1, \qquad B = \ln 0.9.$$

1. Use Taylor series to write A and B as infinite sums.

2. If you want to estimate A or B with a small error using a partial sum, the fastest way is to use different theorems for A and B. What are they?

3. Estimate B with an error smaller than 0.001.