Exam 2 is Thursday, August 9. It covers:
§§11.1-11.11 convergence tests except integral test; finding Taylor series; computing using alternating series; error in alternating series.

1) You’ll use the formula \( \ln(1 + x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \cdots + (-1)^{n+1} \frac{x^n}{n} \).
   i) What is \( S_3 \) and \( b_4 \)?
   ii) Use \( S_3 \) to compute \( \ln(1.02) \). Write as a decimal. iii) How big can the error be? Write with scientific notation.

2) Suppose you’re using the formula \( \sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots \)
   i) What is \( S_2 \) and \( b_3 \)?
   ii) Use \( S_2 \) to compute \( \sin(0.03) \). Write as a decimal. iii) How big can the error be? Write with scientific notation.

3) Suppose you’re computing \( \sin(0.03) \), using the alternating series
   \[ \sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots \]
   a) Find \( S_2 \) and \( b_3 \).
   b) Compute \( S_2 \) when \( x = 0.03 \); round correctly to six decimal places.
   c) How big can error\(_{A}\) be?

4) Suppose you’re computing \( e^{-0.02} \) using the alternating series
   \[ e^{-x} = 1 - x + \frac{x^2}{2!} - \frac{x^3}{3!} + \frac{x^4}{4!} + \cdots \]
   a) Write out \( S_3 \) and \( b_4 \)
   b) Use \( S_4 \) to compute \( e^{-0.02} \); write as a decimal.
   c) How large can error\(_{A}\) be? Write using scientific notation.