Week 1 Homework - Sections 1.2 and 1.3

Due Wed 2/5
Your Name

Question 1: Polynomial Interpolation

(a) Prove Lagrange basis polynomials satisfy $\ell_i(x_j) = \delta_{ij}$.

(b) Construct the interpolating polynomial for $f(x) = \sin(x)$ at nodes $x_0 = 0$, $x_1 = \pi/2$.

Question 2: Rounding Miaus

(a) Compute the absolute error in approximating $\sqrt{2}$ with 1.4142.

(b) Explain truncation vs. rounding errors.