AE4520: Advanced Structural Analysis

Food for thought (Beams)

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Problem 1

- The simply supported beam shown is subject to a uniform lateral load p_y
- Find the exact solution for bending displacement and bending moment (this can be done by direct integration)
- Assume a series solution of the form

$$v = \sum_{n=1}^{\infty} A_n \sin \frac{n\pi z}{\ell}$$

  - Find an expression of A_n
- Show the convergence of error in the displacement and bending moment at midspan as function of number of terms