Lecture 22 – Approximate Methods of Analysis – Cont’d

1) Approximate Analyses of Continuous Beams -
2) Analysis of Rigid Frames
3) Analyses of Continuous Trusses
4) Analysis of Multistory Frames
5) Symmetric and Anti-symmetric Structures
6) Cables and Arches

T = \left( V^2 + N_{\text{end}}^2 \right)^{\frac{1}{2}}

T = N \sqrt{1 + \left( \frac{V}{N} \right)^2}

T = N \sqrt{1 + \left( \frac{4T}{V} \right)^2}

\left( \text{for \ unknown} \right)

\left( \text{at \ support} \right)

\frac{M_{\text{max}}}{y_{\text{max}}} = N_{\text{mid.}} = H_{\text{end.}}

\text{or: } y(x) = \frac{M(x)}{H_{\text{end.}}}

T = \frac{y(x)}{a_{\text{max}}!}
To have only axial loads.

\[ M = 0 \quad \text{or} \]

\[ H = \frac{M(x)}{y'(x)} \quad \text{or} \]

\[ y(x) = \frac{P(x)}{H} \]

1. What if we have a high arch (\( y \gg a \))? \( H = ? \)

2. What if we have a low arch (\( y \gg a \)) \( H = ? \)

3. What if we have a series of known loads? What is the shape of the arch.

4. What would be the best shape for an uniform load?

5. What if we have a uniform load but a circular arch?