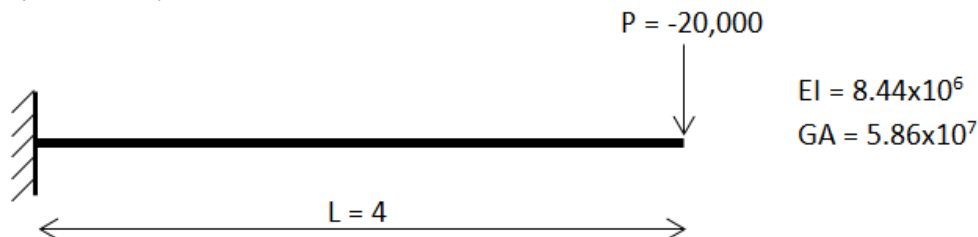


1st Order Linear - Simple Cantilever

Problem Definition

A 4 long cantilever is subjected to a tip load of 20,000.



Assumptions

Flexural and shear deformations are included.

Key Results

Result	Theoretical Formula	Theoretical Value	Solver Value	% Error
Support Reaction	$-P$	20,000	20,000	0%
Support Moment	PL	-80,000	-80,000	0%
Tip Deflection	$\frac{PL^3}{3EI} + \frac{PL}{GA}$	-0.0519	-0.0519	0%

Conclusion

An exact match is observed between the values reported by the solver and the values predicted by beam theory.

Related topics

- [1st Order Linear - Simply Supported Square Slab](#)
- [1st Order Linear - 3D truss](#)
- [1st Order linear - Thermal Load on Simply Supported Beam](#)
- [1st Order Nonlinear - Simple Cantilever](#)
- [1st Order Nonlinear - Nonlinear Supports](#)
- [1st Order Nonlinear - Displacement Loading of a Plane Frame](#)
- [2nd Order Linear - Simple Cantilever](#)
- [2nd Order linear - Simply Supported Beam](#)
- [2nd Order Nonlinear - Tension Only Cross Brace](#)
- [2nd Order Nonlinear - Compression Only Element](#)
- [1st Order Vibration - Simply Supported Beam](#)
- [1st Order Vibration - Bathe and Wilson Eigenvalue Problem](#)
- [2nd Order Buckling - Euler Strut Buckling](#)
- [2nd Order Buckling - Plane Frame](#)