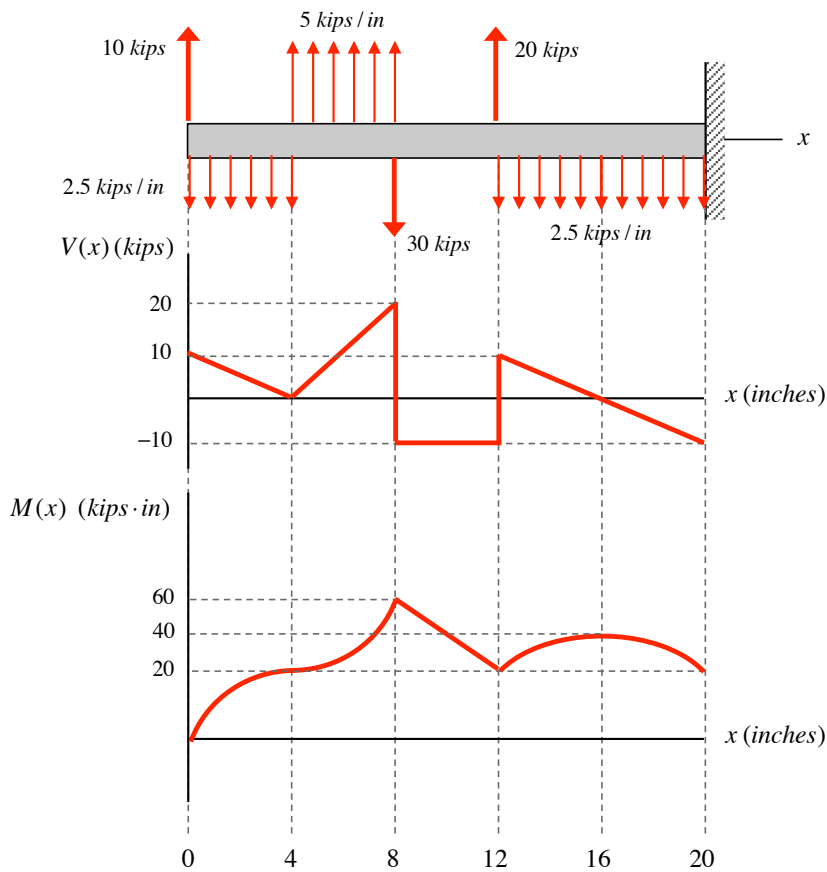


Consider the cantilevered beam shown below that is loaded only by concentrated and distributed forces (no external couples applied). The loading is not shown in the figure of the beam. The internal shear force distribution in the beam is shown below. For this beam:

- Determine the internal bending moment $M(x)$ in the beam and show $M(x)$ in the plot below.
- Determine the external loading (both concentrated and distributed forces) acting on the beam and show these on the figure of the beam below.
- Determine the maximum normal stress in the beam and indicate the location of this maximum stress in terms of both x and the location on the cross section.
- Determine the maximum shear stress in the beam and indicate the location of this maximum stress in terms of both x and the location on the cross section.



Loading found from:

$$p(x) = \frac{dV}{dx}$$

$$V(x^+) = V(x^-) + P_0$$

Slope of $M(x)$ found from:

$$V(x) = \frac{dM}{dx}$$

Values of $M(x)$ found from:

$$M(x) = M(x_0) + \int_{x_0}^x V(x) dx$$