

Consider the loading on the cantilevered beam shown below.

- Sketch the shear force $V(x)$ and bending moment $M(x)$ distribution on the beam using the axes below. Provide details on your calculations.
- Determine the location(s) along the beam at which the maximum magnitude normal stress exists and location(s) along the beam at which the maximum magnitude shear stress exists.
- Consider a circular beam cross-section "A" shown. For this cross section, determine the maximum magnitude normal stress and its location on the cross section. Also, what is the shear stress at the neutral axis for the location(s) along the beam length where the magnitude of the shear force is the greatest? Feel free to use the results from Example 10.11 of the lecture book in finding the neutral axis shear stress.

Use the following in your calculations: $L = 3\text{ m}$, $p_0 = 20\text{ kN/m}$, $F_C = 50\text{ kN}$ and $b = 0.1\text{ m}$.

