1. A stepped beam with properties as shown below has a spring support at the one end \( B \) of the beam and is simply supported at the other end. The beam is loaded with force \( P \) in the center. Write down the equation (all the integrals) to compute the midpoint deflection using the unit load method. The integrands must be fully described (i.e. full algebraic expressions and limits must be shown).
2. For the two structures shown below identify the redundants, sketch appropriate unit load systems and compute deflection and slope at A. Do not compute bending moments etc.

For part a) write the appropriate bending moment expression for the Actual loading and redundant of your choice.