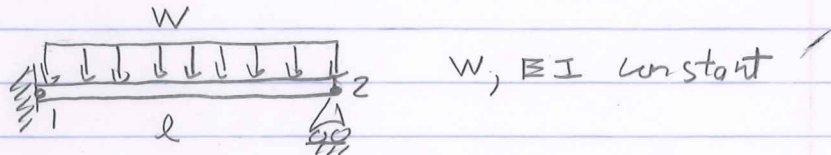


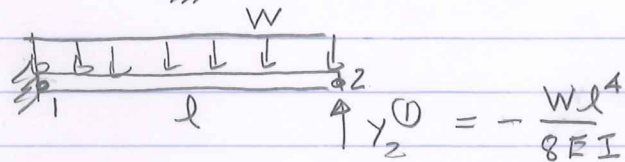
33. Statically indeterminate beams

Topic 31 showed that the beam differential equation can be applied directly to statically indeterminate beams. Superposition can also be used. (Both methods apply to the linear case.)

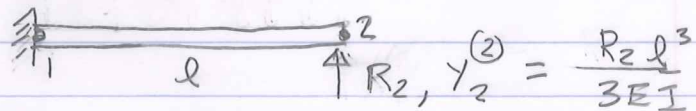
Example:



Make determinate
(1)



Put back reaction
(2)



Superimpose

$$y_2 = 0 = y_2^{(1)} + y_2^{(2)}$$

$$= -\frac{Wl^4}{8EI} + \frac{R_2 l^3}{3EI} \Rightarrow R_2 = \frac{3}{8} Wl$$

With R_2 known, the beam is determinate.