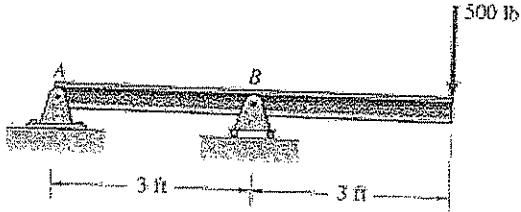


10.2.1

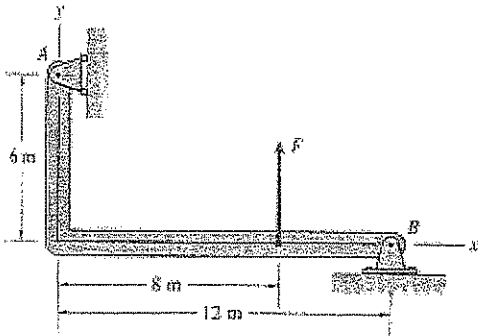
What are the reactions at the supports A and B for the beam supported and loaded as shown?



Ans: $A_x = 0$, $A_y = -500\text{lb}$, $B = 1000\text{lb}$

10.2.2

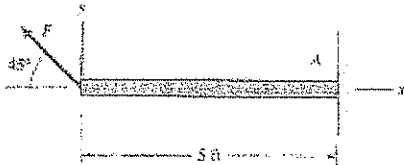
What are the reactions at the supports A and B for the beam supported and loaded as shown give that $F = 40\text{ kN}$?



Ans: $A_x = -26.7\text{ kN}$, $B_x = 26.7\text{ kN}$, $B_y = -40.0\text{ kN}$

10.2.3

For the cantilever beam shown is embedded in a concrete wall as shown. What is the maximum F that can be applied if it has been determined that the beam will pull out of the concrete at 1000 lbs, the concrete will fail if the vertical load exceeds 2000 lbs or the moment exceeds 3000 ft-lb?



Ans: 849 lb

9.30.1 A nozzle with a steady flow of air entering at 2.21 kg/m^3 and 40 m/s and is exiting at 180 m/s and 0.752 kg/m^3 . 90 cm^2 is the area of the inlet; determine (a) the mass flow rate, and (b) the exit area.

Ans: (a) 0.796 kg/s , (b) 58 cm^2

9.30.2 Steam is flowing at 200 lbm/s through a pipe at 200 psia and 600°F . if velocity is not to exceed 50 ft/s , what is minimum diameter the pipe.

Ans: 3.63 ft

9.30.3 Initially 35°C air at 120 kPa fills a spherical balloon with a diameter of 3 m . Air enters through a 1-m diameter opening of the balloon with a velocity of 2 m/s at 35°C and 120 kPa . How long will it take to for the balloon to reach a diameter of 15-m assuming the temperature and pressure of the air in the balloon is the same as the air going into the balloon?

Ans: 18.6 min