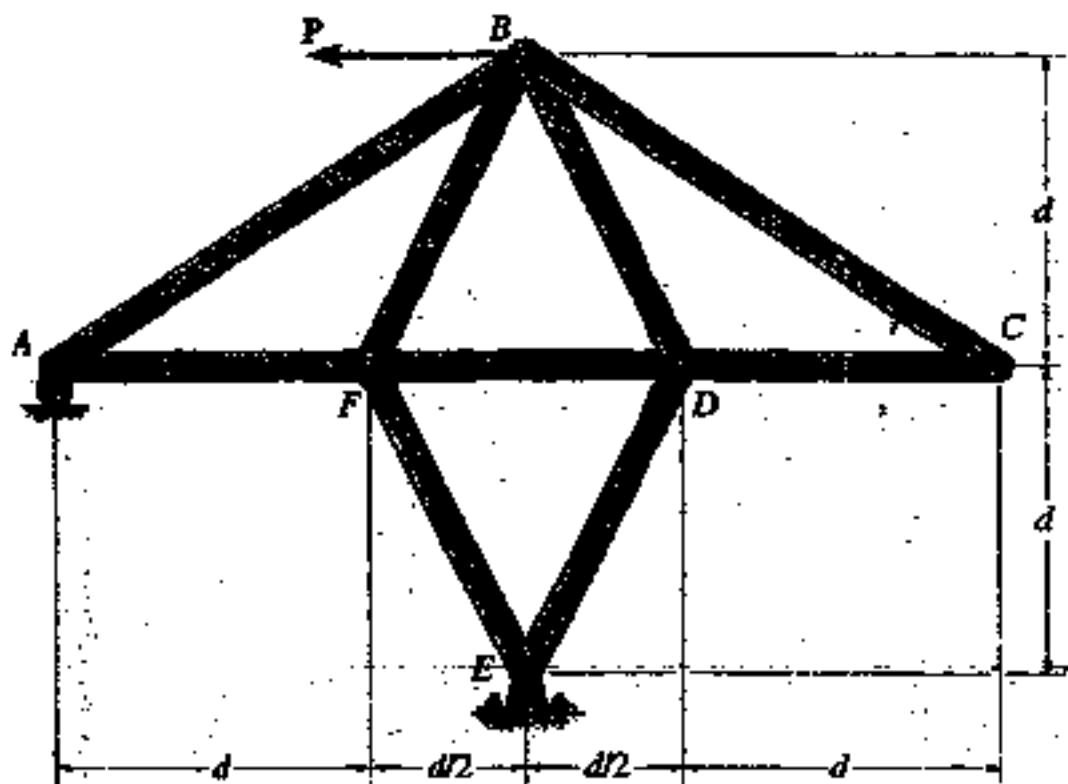
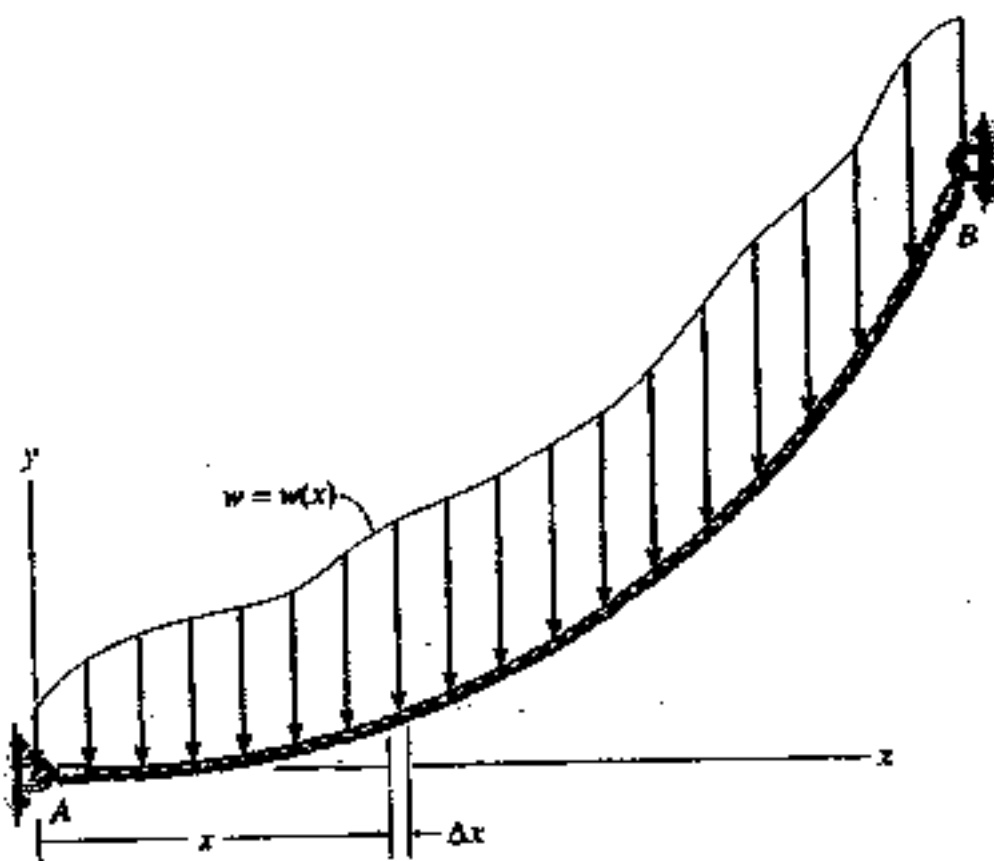


1. The maximum allowable tensile force in the members of the truss is  $(F_t)_{\max} = 6\text{kN}$ , and the maximum allowable compressive force is  $(F_c)_{\max} = 4\text{kN}$ . Determine the maximum magnitude of the load  $P$  that can be applied to the truss. Take  $d = 1\text{m}$ . (25 points)



2. Please derive the curve ( $y=y(x)$ , an integration form) of a weightless cable subjected to a loading with the function of  $w=w(x)$ . (25 points)



3. The two blocks have weight of  $W_A=400\text{N}$  and  $W_B=500\text{N}$ . Determine the smallest horizontal force  $P$  that must be applied to block A in order to move it. The coefficient of static friction between the blocks is  $\mu_s=0.35$  and between the floor and each block  $\mu'_s=0.45$ . (25 points)



4. The uniform right circular cone having a mass  $m$  is suspended from the cord as shown. Determine the angle  $\theta$  at which it hangs from the wall for equilibrium. Is the cone in stable equilibrium? (25 points)

