Prob. 1 (5.109)
A thin steel wire of uniform cross section is bent into the shape shown, where arc $BC$ is a quarter circle of radius $R$. Locate its center of gravity.

Prob. 2 (5.62)
For the beam and loading shown, determine (a) the magnitude and location of the resultant of the distributed load, (b) the reactions at the beam supports.

Prob. 3 (5.74)
A grade beam $AB$ supports three concentrated loads and rests on soil and the top of a large rock. The soil exerts an upward distributed load, and the rock exerts a concentrated load $R_R$ as shown. Knowing that $w_B = 0.4w_A$, determine (a) the largest value of $P$ for which the beam is in equilibrium, (b) the corresponding value of $w_A$.

Prob. 4 (5.84)
The gate $AB$ is located at the end of a 6-ft-wide water channel and is supported by hinges along its top edge $A$. Knowing that the floor of the channel is frictionless, determine the reactions at $A$ and $B$. 