

33. We use Eq. 6-14,  $D = \frac{1}{2}C\rho Av^2$ , where  $\rho$  is the air density,  $A$  is the cross-sectional area of the missile,  $v$  is the speed of the missile, and  $C$  is the drag coefficient. The area is given by  $A = \pi R^2$ , where  $R = 0.265$  m is the radius of the missile. Thus

$$D = \frac{1}{2}(0.75)(1.2 \text{ kg/m}^3)\pi(0.265 \text{ m})^2(250 \text{ m/s})^2 = 6.2 \times 10^3 \text{ N} .$$