

5. Various geometric formulas are given in Appendix E.

(a) Substituting

$$R = (6.37 \times 10^6 \text{ m}) (10^{-3} \text{ km/m}) = 6.37 \times 10^3 \text{ km}$$

into *circumference*  $= 2\pi R$ , we obtain  $4.00 \times 10^4 \text{ km}$ .

(b) The surface area of Earth is

$$4\pi R^2 = 4\pi (6.37 \times 10^3 \text{ km})^2 = 5.10 \times 10^8 \text{ km}^2 .$$

(c) The volume of Earth is

$$\frac{4\pi}{3} R^3 = \frac{4\pi}{3} (6.37 \times 10^3 \text{ km})^3 = 1.08 \times 10^{12} \text{ km}^3 .$$