

4.3

76. $\log_{10} \frac{20}{27}$

4.4

52. Given $f(x) = \log_2 x$, evaluate (a) $f(2^3)$ (b) $f(2^{\log_2 2})$ (c) $f(2^{2 \log_2 2})$.60. **Decibel Levels** Find the decibel ratings of the following sounds, having intensities as given. Round each answer to the nearest whole number.

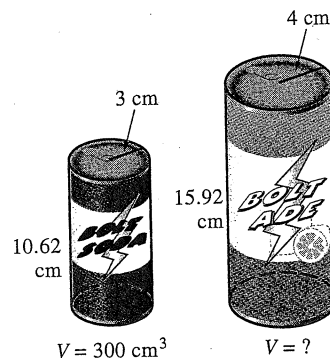
- (a) whisper, $115I_0$ (b) busy street, $9,500,000I_0$
 (c) heavy truck, 20 m away, $1,200,000,000I_0$
 (d) rock music, $895,000,000,000I_0$
 (e) jetliner at takeoff, $109,000,000,000,000I_0$

62. **Earthquake Intensity** On June 16, 1999, the city of Puebla in central Mexico was shaken by an earthquake that measured 6.7 on the Richter scale. Express this reading in terms of I_0 . See Exercise 61. (Source: *Times Picayune*.)

4.6

38. **Electricity Consumption** Suppose that in a certain area the consumption of electricity has increased at a continuous rate of 6% per year. If it continued to increase at this rate, find the number of years before twice as much electricity would be needed.

3.6

28. **Current in a Circuit** The current in a simple electrical circuit varies inversely as the resistance. If the current is 50 amps when the resistance is 10 ohms, find the current if the resistance is 5 ohms.36. **Volume of a Cylinder** The volume of a right circular cylinder is jointly proportional to the square of the radius of the circular base and to the height. If the volume is 300 cm^3 when the height is 10.62 cm and the radius is 3 cm, find the volume to the nearest tenth of a cylinder with radius 4 cm and height 15.92 cm.44. **Nuclear Bomb Detonation** Suppose a nuclear bomb is detonated at a certain site. The effects of the bomb will be felt over a distance from the point of detonation that is directly proportional to the cube root of the yield of the bomb. Suppose a 100-kiloton bomb has certain effects to a radius of 3 km from the point of detonation. Find the distance to the nearest tenth that the effects would be felt for a 1500-kiloton bomb.