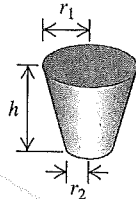


25.52. An idealized voltmeter is connected across the terminals of a 15.0-V battery, and a 75.0- Ω appliance is also connected across its terminals. If the voltmeter reads 11.3 V: (a) how much power is being dissipated by the appliance, and (b) what is the internal resistance of the battery?

25.63. A material of resistivity ρ is formed into a solid, truncated cone of height h and radii r_1 and r_2 at either end (Fig. 25.40). (a) Calculate the resistance of the cone between the two flat end faces. (*Hint:* Imagine slicing the cone into very many thin disks, and calculate the resistance of one such disk.) (b) Show that your result agrees with Eq. (25.10) when $r_1 = r_2$.

Figure 25.40
Problem 25.63.



25.66. In the circuit shown in Fig. 25.41, R is a variable resistor whose value can range from 0 to ∞ , and a and b are the terminals of a battery having an emf $\mathcal{E} = 15.0$ V and an internal resistance of 4.00 Ω . The ammeter and voltmeter are both idealized meters. As R varies over its full range of values, what will be the largest and smallest readings of (a) the voltmeter and (b) the ammeter? (c) Sketch qualitative graphs of the readings of both meters as functions of R , as R ranges from 0 to ∞ .

Figure 25.41 Problem 25.66.

