Exercise 19

At the surface of the ocean, the water pressure is the same as the air pressure above the water, 15 lb/in^2. Below the surface, the water pressure increases by 4.34 lb/in^2 for every 10 ft of descent.

(a) Express the water pressure as a function of the depth below the ocean surface.

(b) At what depth is the pressure 100 lb/in^2?

Solution

The pressure in pounds per square inch is

$$P(h) = 15 + \frac{4.34}{10}h,$$

where h is the depth in feet below the surface. For the answer to the second part, set $P = 100$ and solve for h.

$$100 = 15 + \frac{4.34}{10}h$$

$$h \approx 196 \text{ ft}$$