Exercise 8

A mountain climber models the temperature T (in °F) at elevation h (in ft) by

$$T = 70 - 0.003h$$

(a) Find the temperature T at an elevation of 1500 ft.

(b) If the temperature is 64°F, what is the elevation?

Solution

Part (a)

Plug in the given elevation to the formula to get the temperature.

$$T = 70 - 0.003(1500) = 65.5°\text{F}$$

Part (b)

Since the elevation is desired, solve the given formula for h.

$$T = 70 - 0.003h$$

Subtract both sides by 70 to isolate the term with h.

$$T - 70 = -0.003h$$

Divide both sides by -0.003 to solve for h.

$$h = \frac{T - 70}{-0.003}$$

Plug in the given temperature.

$$h = \frac{64 - 70}{-0.003} = 2000$$

Therefore, the elevation at 64°F is 2000 feet.