

1. Suppose you are reeling in a fish. The top of your fishing pole is at a height of 8 feet. The fish is at a distance of q feet from the shore. The length of the string from the pole to the fish is l feet.

(a) Draw a diagram, then write an equation involving q and l .

(b) You are winding up 0.5 feet of string per second. This translates into:

$$\frac{d?}{d?} = ?$$

(c) How fast is the fish approaching you when it's 50 feet away?

(d) How fast is the fish approaching you when it's 10 feet away?

2. Suppose we're inflating a balloon with helium at a constant rate of 6 cubic centimeters per second.

(a) Translate the above sentence into mathematical symbols. (Use V for volume, r for radius, t for time.)

(b) The formula for the volume of a (round) balloon is: $V = (4/3)\pi r^3$.
Write r as a function of V .

(c) Is r a function of time?

(d) What is the balloon's volume after 5 seconds? After 10 seconds?

(e) Find r' , the rate of change of the radius, after we've been inflating (the balloon) for 5 seconds, and for 10 seconds. Be careful: Is it clear whether the problem is asking for $\frac{dr}{dV}$ or for $\frac{dr}{dt}$?

(What does $\frac{dr}{dV}$ mean anyway?)

ANNOUNCEMENTS

Homework due Friday, 11/06/98:

HH, section 4.6: 33, 34; section 4.7: 21.