

1. The height of a cylinder is increasing at 7 m/s and the radius is increasing at 3 m/s.

How fast is the volume changing at the instant the cylinder is 5 m high and the radius measures 6 m?

Guide:

Draw a simple diagram and write the relevant geometry formula.

Consider what variables go in the basic model $dy/dt = (dy/dx)(dx/dt)$

Write the related rate equation in V , r , and t .

Fill in what you know.

Solve for the quantity sought. *Make sure your units are correct.*

2. An oil tanker in Puget Sound has sprung a leak, and a circular oil slick is forming. The oil slick is 4 inches thick everywhere. The diameter is increasing at the rate of 12 ft/hr. At the moment when the diameter is 10 ft, how fast is the oil leaking from the tanker?

Draw a simple diagram and write the relevant geometry formula.

Consider what variables go in the basic model $dy/dt = (dy/dx)(dx/dt)$

Write the related rate equation in V , d , and t .

Fill in what you know.

Solve for the quantity sought. *Make sure your units are correct.*