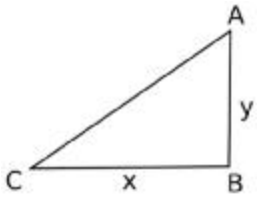
Related Rates Starter Pack

1. A spherical balloon is filled with air. If its volume increases with a rate of $72\pi\ ft^3/sec$, how fast is its radius changing when $r = 3ft$? ($V = \frac{4}{3}\pi r^3$)

2. A helicopter is landing from point A to point B with the speed of 10m/sec. A viewer is located at point C is which is 3m away from the helicopter landing point. How fast is the distance of the viewer from of the helicopter changing when the helicopter is 4m above the ground?



3. A moving object's position in meters is governed by this equation $x(t) = 2t^2 - t + 1$.
a) What is the average velocity in time interval [0,2] seconds? b) What is the velocity at $t = 3$ seconds?

4. A cylindrical tank has a radius of 3 meters. If water is poured into it with a flow of 50 m^3/sec, how fast is the height of water increasing when $h = 10m$? ($V = \pi r^2 h$)

5. A thin sheet of ice is in the form of a circle. If the ice is melting in a way that the area of the sheet is decreasing at a rate of 0.25 m^2/sec at what rate is the radius decreasing when the area of the sheet is $10\pi\ m^2$?

© Calculus Captain. All Rights Reserved. Licensed to one student for personal use. Please don't share — get your own copy at calculuscaptain.com.