

Math 190 Lab 8 Quiz 4 Prep: Nov 9-13

One of the following three problems will appear on Friday's Quiz. The quiz will only contain one problem.

Questions:

1. The foliage of a bonsai tree you are tending is a perfect sphere. The radius of the foliage is increasing at a rate of 0.5 mm/day. How fast is the volume of the sphere increasing when the radius is 100 mm. The volume of a sphere is

$$V = \frac{4}{3}\pi r^3$$

where r is the radius.

2. Your trucker friend is 20 km West of base at a coffee shop enjoying a break. You are currently 80 km North of base travelling North (to pick up a shipment of lumber) at a speed of 60 km/h. How fast is the distance between you and your friend increasing at the present time?
3. A 20m tree has been bent in a storm and makes an angle of 60° with the ground. Some sap is dripping down the tree moving at speed 2 m/min. How fast is the distance from the sap to the ground decreasing when the sap is half way down the tree?