

TA: Ondřej Čertík  
web: <http://hpfem.math.unr.edu/~ondrej/>  
class: MATH 181  
date: January 22, 2009

## 1 Introduction

## 2 Problem 1

A tank holds 1000 gallons of water, which drains from the bottom of the tank in half an hour. The values in the table show the volume  $V$  of water remaining in the tank (in gallons) after  $t$  minutes.

$t(\text{min})$	5	10	15	20	25	30
$V(\text{gal})$	694	444	250	111	28	0

- If  $P$  is the point  $(15, 250)$  on the graph of  $V$ , find the slopes of the secant lines  $PQ$  when  $Q$  is the point on the graph with  $t = 5, 10, 20, 25$ , and  $30$ .
- Estimate the slope of the tangent line at  $P$  by averaging the slopes of two secant lines.
- Use a graph of the function to estimate the slope of the tangent line at  $P$ . (This slope represents the rate at which the water is flowing from the tank after 15 minutes.)