

Instructor: Prof. A. Suci

Name: _____

MTH 1124

Calculus 2

Winter 2001

QUIZ 1

Instructions: Put your name in the blanks above. Put your final answers to each question in the designated spaces on these pages. Show your work—if there is not enough room, use another sheet.

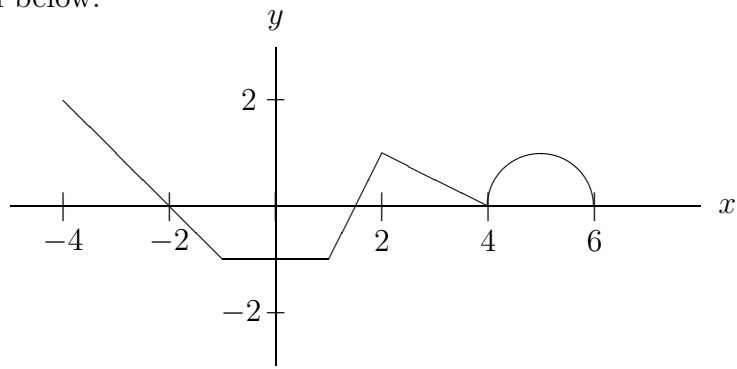
- (1) A car racing at 100 ft/sec brakes to a complete stop in 12 seconds. Its velocity is recorded every 2 seconds, as follows:

t (seconds)	0	2	4	6	8	10	12
$v(t)$ (ft/sec)	100	90	75	55	30	10	0

- (a) Give lower and upper estimates for the distance the car traveled in those 12 seconds.
- (b) On a sketch of velocity against time, show the lower and upper estimates of part (a).
- (c) To estimate the distance traveled accurate to within 5 feet, how often should one record the velocity?

- (2) Estimate $\int_1^4 \frac{x}{x+1} dx$ using left-hand and right-hand sums with 6 subdivisions.

(3) The graph of $y = f(x)$ is given below.



(a) What is $\int_{-4}^6 f(x)dx$?

(b) What is the average value of f on $[-4, 6]$?

(4) Water is spilling out of a reservoir at a rate of $f(t) = 100e^{-t}$ gallons per minute, where t is measured in minutes.

(a) Write a definite integral expressing the total quantity of water which spills out in the first 3 hours. (**Do not evaluate the integral!**)

(b) In what units is the integral in part (b) measured in?