

Name _____

Homework 21
Sections 5.1 & 5.2

1. (1,2,1) A car initially going at 100 ft/sec brakes at a constant rate (constant negative acceleration), coming to a stop in 10 seconds.

(a) Graph the velocity from $t = 0$ to $t = 10$.

(b) How far does the car travel while braking?

(c) How far does the car travel if its initial velocity is halved, but it brakes at the same constant rate?

2. (3ea) At time t , measured in seconds, an object's velocity v , in meters/sec is given by

$$v(t) = t + t^2 \quad \text{for} \quad 0 \leq t \leq 6.$$

Compute upper and lower estimates for the distance traveled (and average the two) during this interval using:

(a) $n = 1$

(b) $\Delta t = 2$

(c) $\Delta t = \frac{3}{2}$

3. (3) Compute exactly, without a calculator, $\int_{-2}^3 1 - x; dx$. *Hint*: it may help to sketch a picture.

4. (4) Number 32 on page 271.

(a) $\int_0^2 f(x) dx =$ _____

(b) $\int_{-2}^2 f(x) dx =$ _____

(c) The total shaded area is _____

(d) $\int_{-2}^2 |f(x)| dx =$ _____