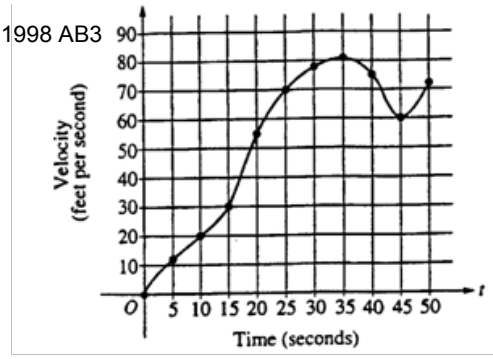
From 1998 AB3



t (seconds)	v(t) (feet per second)
0	0
5	12
10	20
15	30
20	55
25	70
30	78
35	81
40	75
45	60
50	72

The graph of the velocity v(t) in ft/sec, of a car traveling on a straight road, for $0 \le t \le 50$. is shown above. A table of values for v(t) at 5 second intervals of time t, is shown to the right of the graph.

(a) During what intervals of time is the acceleration of the car positive? Give a reason for your answer.

(b) Find the average acceleration of the car, in ft/sec^2, over the interval $0 \le t \le 50$.

(c) Find one approximation for the acceleration of the car, in ft/sec^2, at $t = 40$. Show the computations you used to arrive at your answer.

51.

156 trees

12 $\frac{b}{tree}$

$y = T \cdot \frac{b}{tree}$

$\frac{dy}{dt} = T \cdot \frac{d(b)}{d(tree)} + \frac{b}{tree} \frac{dT}{dt}$

$\frac{dy}{dt} = 156 \cdot 1.5 + 12 \cdot 13$

expanding $\frac{dT}{dt} = 13 \frac{T}{yr.}$

$\frac{db}{dT} = 1.5 \frac{b}{tree}$

52.

$P = 65$ members

$m = \$250$

$IC = \frac{m}{P}$

$\frac{dm}{dt} = \frac{\$10}{yr.}$

$\frac{d}{dt}(IC) = \frac{P\,dm - m\,dP}{P^2}$

$\frac{dp}{dt} = \frac{6}{yr.}$

3.4a

13. $s = 24t - .8t^2$

$v = 24 - 1.6t$

15. $a = -1.6 \frac{m}{sec^2}$

(sec, m)

$\frac{m}{sec.}$

$\frac{m}{sec} \cdot \frac{1}{sec.}$

18. $24 - 1.6t = 0$

$\frac{24}{1.6} = t$

$t = \frac{30}{2} = 15$ sec.

d. $24t - .8t^2 = 90$

$.8t^2 - 24t + 90 = 0$

$8t^2 - 240t + 900 = 0$

15.

$$s = 24t - 4.9t^2$$

$$v = 24 - 9.8t = 0$$

$$t = \frac{24}{9.8}$$

18.