

7.1

①  $a = 1 + 3\sqrt{t}$

(a)  $v(t) = \int (1 + 3t^{1/2}) dt$   
 $= t + 2t^{3/2} + C \text{ mph}$

$v(t) = t + 2t^{3/2}$

seconds  $\rightarrow$  (b)  $\int_0^9 (t + 2t^{3/2}) dt$

$\int_0^{9/3600} (t + 2t^{3/2}) dt = 3.375 \times 10^{-6} \times 5280 = .018 \text{ ft}$

$\int_0^9 \left( \frac{t + 2t^{3/2}}{3600} \right) dt = .0652 \times 5280 = 344.520 \text{ ft}$

$\int_0^9 (t + 2t^{3/2}) dt \neq 3600 \times 5280 = 344.520$

②  $a = -32$

$s(t) = \int -32t + 90$

$v(t) = \int -32 dt$

$s(t) = -16t^2 + 90t + C$

$= -32t + C$

$s(t) = -16t^2 + 90t = 0$

$v(t) = -32t + 90$

$t(-16t + 90) = 0$

(a)  $v(3) = -32(3) + 90$

$t=0 \quad \frac{90}{16} = \frac{16t}{16}$

$= \boxed{-6 \text{ ft/sec}}$

$\boxed{5.625 = t}$   
 sec

(d) DISTANCE TRAVELED =  $\int_0^{5.625} |-32t + 90| dt$

⑨  $1 + 3\sqrt{t}$  mph/sec

$$\int_0^9 (1 + 3\sqrt{t}) dt$$

(a)  $v(t) = \int (1 + 3\sqrt{t}) dt$

$$= t + 3 \cdot \frac{2}{3} t^{3/2} + C$$

$$= t + 2t^{3/2} + C \rightarrow v(t) = t + 2t^{3/2}$$

$$v(0) = 0 + 2(0)^{3/2} + C$$

$$v(9) = 9 + 2(9)^{3/2}$$

$$0 = C$$

$$= 9 + 54$$

$$= 63 \text{ mph}$$

(b)  $v(t) = t + 2t^{3/2}$  mph

9 sec

$$v(t) = \frac{t}{3600} + \frac{2t^{3/2}}{3600} \text{ mps}$$

$$s(t) = \int_0^9 \left( \frac{t}{3600} + \frac{2t^{3/2}}{3600} \right) dt$$

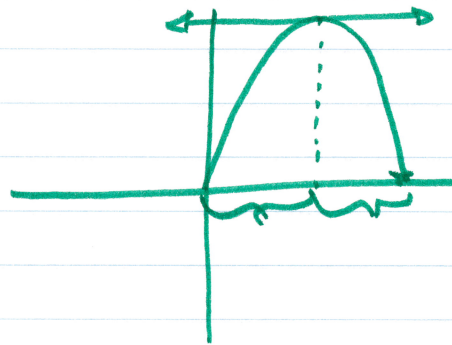
⑪  $a(t) = -32 \text{ ft/sec}^2$

(a)  $v(t) = -32t + C$

$$v(t) = -32t + 90$$

$$v(3) = -32(3) + 90$$

$$= -6 \text{ ft/sec}$$



~~$$v(t) + 32t = 90$$~~

$$\frac{32t}{32} = \frac{90}{32}$$

$$t = 2.8125 \times 2 = \underline{5.625 \text{ sec}}$$

7.1

$$\textcircled{34} \quad \frac{b-a}{2n} \frac{15}{2(5)} = \frac{3}{2}$$

$$\frac{3}{2} [4 + 2(8) + 2(6) + 2(9) + 2(10) + 10] = 120$$

$$5 + \int_0^{15} a(t) dt = 5 + 120 = \boxed{125 \text{ Ft/sec}}$$