

Answers

a)  $s(t) = -16t^2 + 0t + 1362$

$s(t) = -16t^2 + 1362$

$v(t) = -32t$

b) avg. vel. =  $\frac{s(2) - s(1)}{2 - 1}$

=  $\frac{1298 - 1346}{1}$

=  $\frac{-48}{1}$

=  $-48 \text{ ft/sec}$

c)  $v(t) = -32t$

$v(1) = -32 \text{ ft/sec}$

$v(2) = -64 \text{ ft/sec}$

d) coin at ground level  $\Rightarrow$  position = 0.

$0 = -16t^2 + 1362$

$16t^2 = 1362$

$t^2 = 85.125$

$t = 9.23 \text{ sec.}$

e)  $v(t) = -32t$

$v(9.23) = -32(9.23)$

=  $-295.24 \text{ ft/sec}$

$$2. \quad s(t) = -16t^2 - 22t + 220$$

$$v(t) = -32t - 22$$

$$v(3) = -32(3) - 22$$

$$v(3) = -118 \text{ ft/sec}$$

$$112 = -16t^2 - 22t + 220$$

$$0 = -16t^2 - 22t + 108$$

$$0 = -2(8t^2 + 11t - 54)$$

$$t = -3.375 \quad t = 2$$

$$v(2) = -32(2) - 22$$

$$= -86 \text{ ft/sec}$$

$$a) \quad x = 3t^4 - 10t^3 + 24t^2 \quad -5 \leq t \leq 5$$

$$v(t) = 12t^3 - 48t^2 + 48t$$

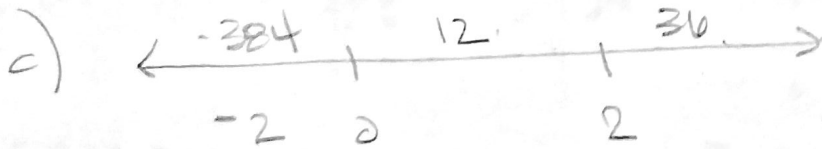
$$a(t) = 36t^2 - 96t + 48$$

$$b) \quad 0 = 12t^3 - 48t^2 + 48t$$

$$= 12t(t^2 - 4t + 4)$$

$$= 12t(t-2)(t-2)$$

$$0 = t \quad t = 2$$



changes direction at  $t=0$

$$d) \quad 0 = 36t^2 - 96t + 48$$

$$12(3t^2 - 8t + 4)$$

$$12(3t-2)(t-2)$$

$$t = \frac{2}{3} \quad t = 2$$

$$v\left(\frac{2}{3}\right) = 12\left(\frac{2}{3}\right)^3 - 48\left(\frac{2}{3}\right)^2 + 48\left(\frac{2}{3}\right)$$

$$= \frac{128}{9}$$