Lesson #42

13. Answer in book incorrect.

a) $v(t) = 3t^2 - 6t$
   $a(t) = 6t - 6$

b) $s(1) = -2$ ft
   $v(1) = -3$ ft/s
   Speed: 3 ft/s
   $a(1) = 0$ ft/s²

c) $t = 0$ $t = 2$

d) speeding up
   $(0,1) \cup (2, \infty)$
   slowing down $\qquad$ * 0 is open,
   $\qquad\qquad$ because it is
   $(1,2)$ $\qquad$ a critical pt
   $\qquad\qquad$ and equal to
   $\qquad\qquad$ zero for $v(t)$

32. a) $s(2) = -15$
    $v(2) = -12$

b) $s(0) = 1$
   $a(0) = -12$

   $s(4) = -31$
   $a(4) = 12$

15d)

Slow down:
$(\frac{3}{2}, 3) \cup (\frac{9}{2}, 5]$
$\qquad\qquad\uparrow$
$\qquad\qquad$ bracket
$\qquad\qquad$ because 5
$\qquad\qquad$ is included
$\qquad\qquad$ in domain,
$\qquad\qquad$ but not a
$\qquad\qquad$ critical pt!

16. a) $v(t) = \dfrac{4 - t^2}{(t^2 + 4)^2}$

$a(t) = \dfrac{-2t(t^2 - 12)}{(t^2 + 4)^3}$

b) $s(1) = \dfrac{1}{5}$
   $v(1) = \dfrac{3}{25}$
   $a(1) = \dfrac{-22}{125}$

c) $t = 2$

d) speeding up: $(2, 2\sqrt{3})$
   slowing down: $(0, 2) \cup (2\sqrt{3}, \infty)$ * 0 is open because
   $\qquad\qquad$ it is a t value that makes
   $\qquad\qquad$ $a(t) = 0$