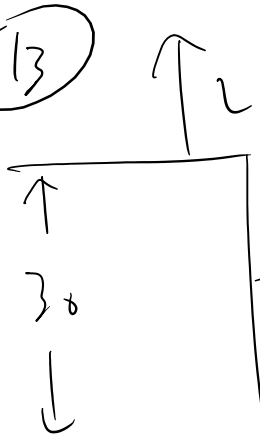
(13) 

$s(t) = 30 + 25t - 16t^2$

(a) $s(0.25) = 30 + 25(0.25) - 16(0.25)^2$

(b) $v(t) = 25 - 32t$

$v(1) = -7$ ft/s

(c) $30 + 25t - 16t^2 = 0$

$$t = \frac{-25 \pm \sqrt{25^2 - 4(-16)(30)}}{-32}$$

$= -0.8$

$t = 2.357$ s

(19) $P = \dfrac{2.25R}{(R+0.5)^2}$ $\qquad \dfrac{dP}{dR}$

$$\frac{dP}{dR} = \frac{(R+0.5)^2(2.25) - 2.25R \cdot 2(R+0.5)}{(R+0.5)^4}$$

$$\frac{2.25(R+0.5)^2 - 4.5R(R+0.5)}{(R+0.5)^4}$$

$$\frac{2.25(R+0.5) - 4.5R}{(R+0.5)^3}$$

$$\left.\frac{dP}{dR}\right|_{R=3} = \frac{2.25(3.5) - 4.5(3)}{3.5^3}$$