1.3 #10 and #11

#10 $A(t)$ -- lbs of salt

$V(t)$ -- gals of water

$C(t) = A(t)/V(t)$ conc of salt lbs/gal

$V(0) = 300$ (Flow in 3 gal/min, Flow out 2 gal/min)

$dV/dt = 3 - 2 = 1$

$V(t) = 300 + 1t$

$\frac{d}{dt}[A(t)] =$ rate salt in $-$ rate salt out

$= 3 \text{ gal/min} \cdot 2 \text{ lbs/gal}$

$- 2 \text{ gal/min} \quad C(t)$

$\frac{dA}{dt} = 6 - 2A/(300 + 1t)$

#11 same as 10 but

rate out $= 3.5$ gal/min

$V(t) = 300 - 0.5t$ gal

$\frac{dA}{dt} = 6 - 3.5A/(300 - 0.5t)$