Wrap up translating 'word problems' into ODEs (notes scanned/posted separately)

Solving ODEs
- $\frac{dy}{dx} = f(x) \implies y(x) = \int f(x) \, dx$
- $\frac{dy}{dx} = g(y) \implies$ autonomous eqns.
  
  Assume that $g(y) \neq 0 \implies h(y) = \frac{1}{g(y)}$
  
  $\frac{dy}{h(y)} \implies \int h(y) \, dy = \int dx = x + c$

  $\implies$ solve $\int h(y) \, dy$ and hopefully you can rearrange and write down $y(x)$

  $\implies$ thus, solving ODEs turns into an integration problem

Fundamental Theorem of Calc. if $f$ is cont. on $[a,b]$ and $f(t) = \frac{d}{dt} F(t)$

Then $\int_a^b f(t) \, dt = F(b) - F(a)$

Ch. 6 discusses notion of solving integrals via constructing anti-derivatives

H.H. Ch. 5.4 for review of general props. of integrals
if \( f \) is a cont. function on \( t \in [a, x] \) and \( a \) is any
# on that interval, then
\[
F(x) = \int_a^x f(t) \, dt
\]
(Second Fundamental Theorem of Calc.)