MTH SC 208, Fall 2011

Week 3 summary:

- 3 ways to solve linear inhomogeneous ODE's: $y' = a(t)y + f(t)$

  (i) Integrating factor: Write as $y' - ay = f$

  int. factor = $e^{-\int a(t)\,dt}$ "product rule in reverse."

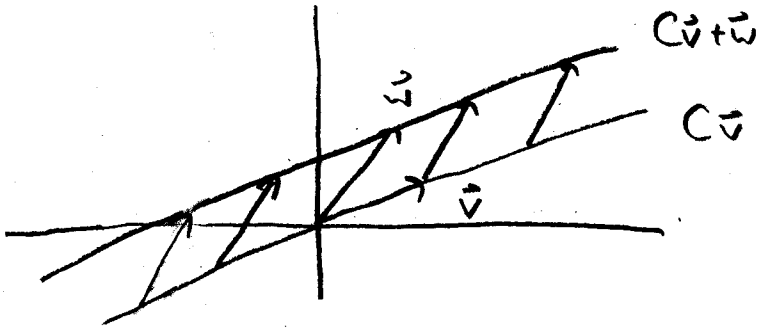
  (ii) Variation of parameters: $y(t) = v(t)\,y_h(t)$, where $y_h(t)$ solves the homog. eq'n $y_h' = a(t)\,y_h$.

  (iii) $y(t) = y_h(t) + y_p(t)$: for any particular solution $y_p(t)$.

- Connection between parametrized lines & solutions to linear ODE's:

  $y(t) = C\,y_h(t) + y_p(t)$

  vs. $\ell = C\vec{v} + \vec{w}$



- Mixing problems: $x'(t) = (\text{rate in}) - (\text{rate out})$.