

# Integrating Factors

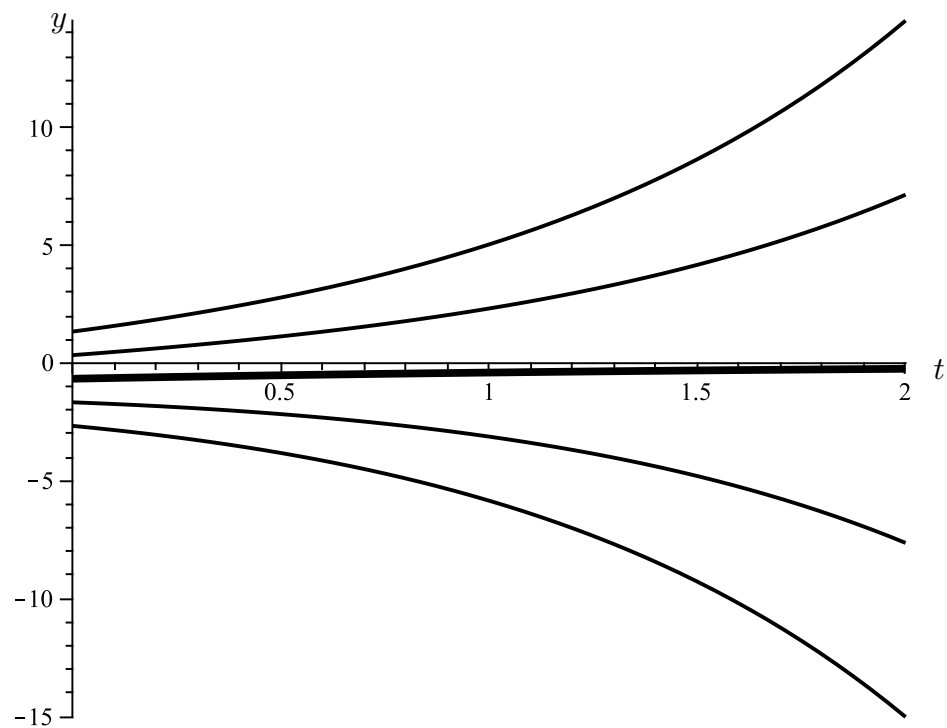
In class we found that the solution to the equation

$$\dot{y} - y = e^{-t/2}$$

is

$$y(t) = -\frac{2}{3}e^{-t/2} + Ce^t. \quad (1)$$

Here are some integral curves of the solution.



Graphs of (1) for  $y(0) = -2/3$  (thick line),  $1/3$ ,  $4/3$ ,  $-5/3$ , and  $-8/3$ .

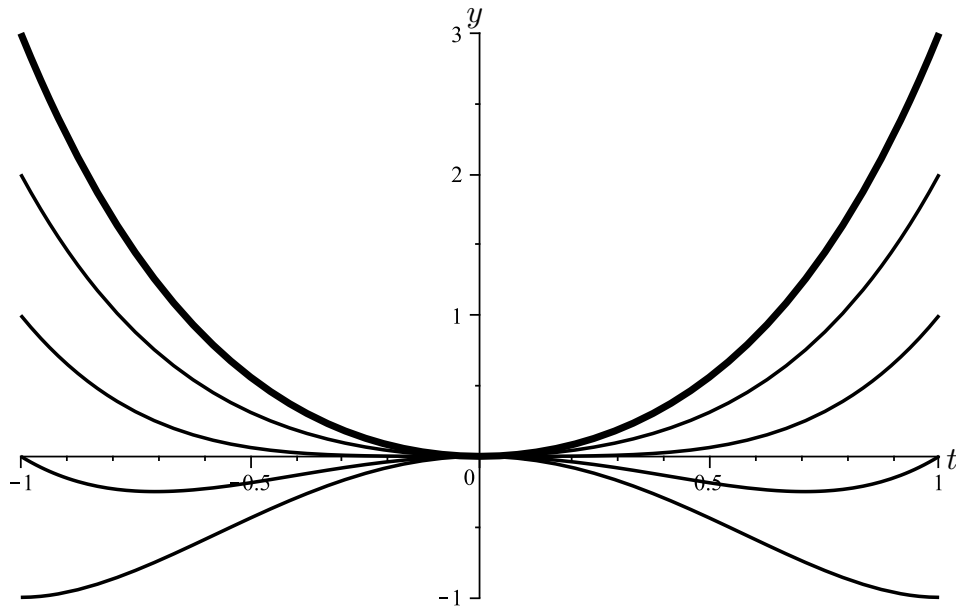
In class we found that the solution to the equation

$$\dot{y} - \frac{2}{t}y = 2t^3$$

is

$$y(t) = t^4 + Ct^2. \quad (2)$$

Here are some integral curves of the solution.



Graphs of (2) for  $C = 2$  (thick line),  $0, \pm 1$ , and  $-2$ .