

## DISCUSSION QUESTIONS

- (1) Is the differential equation  $y' = y^{2/3}$  ordinary? linear? What is its order?
- (2) Which of the following is a solution to the differential equation  $y' = y^{2/3}$ :
- (a)  $y = 8t^2$
  - (b)  $y = e^{2t/3}$
  - (c)  $y = \frac{1}{27}t^3$
  - (d)  $y = 0$  (constant function 0)
- (3) There is a solution to  $xy'' = (4x - 4)y$  of the form  $y = xe^{ax}$  for some real number  $a$ . Find  $a$ .
- (4\*) If  $f, g$  are solutions to  $y^{(3)} + 2e^x y^{(2)} - y = \cos(x)$ , show that  $\frac{f+g}{2}$  is too.