# 微分方程

Exercise Miscellaneous (Chapter 2)

1. In each exercise, find a set of solutions, unless the statement of the exercise stipulates otherwise.

   3. $(3xy + 3y - 4)\ dx + (x + 1)^2\ dy = 0$.
   7. $y' = x^3 - 2xy$; when $x = 1$, $y = 2$.
   11. $(1 + x^2)y' = x^4y^4$.
   15. $xy(dx - dy) = x^2\ dy + y^2\ dx$.
   19. $(x^3 + y^3)\ dx + y^2(3x + ky)\ dy = 0$; $k$ a constant.
   23. $y' + ay = b$; $a$ and $b$ constants. Solve by two methods.
   27. $(2y \cos x + \sin^4 x)\ dx = \sin x\ dy$; when $x = \frac{1}{2}\pi$, $y = 1$.
   37. $y' = y \tan x + \cos x$.
   41. $y = \sec x - y \tan x$.
   45. $y\ dx = (3x + y^3 - y^2)\ dy$; when $x = 1$, $y = -1$.
   49. Find that solution of $y' = 3x + y$ which passes through the point $(-1, 0)$.
   53. $(3x^4y - 1)\ dx + x^5\ dy = 0$; when $x = 1$, $y = 1$.