

1) Solve  $y' + y = 2$   $y(0) = 1$  (from p.4)

2) Solve  $y' = \frac{y}{x} + 1$  (from p.4) (hint: a homogeneous equation, see p.40)

3) Solve  $xy' = x - y$  (from p.10) (hint: a homogeneous equation)

4) Solve  $y' = -y$   $y(0) = 1$  (from p.4)

5) Solve  $y' = y^2$   $y(0) = -1$  (from p.8)

6) Solve  $y' = e^{-x}$   $y(0) = 2$  (from p.11)

7) Solve  $4x^3y - 6e^y + (x^4 - 6xe^y)y' = 0$  (hint: an exact equation)

8) Solve  $y = xy' + \frac{y}{1+y}$  (hint: a separable equation)

9) Solve  $xy' + 4y = \frac{\cos(x)}{x^2}$  (hint: a linear equation)

10) Solve  $x^2y' = xy + e^x y^3$  (hint: a Bernoulli equation)

11) Solve  $y' + y^2 = x^{-2} - \frac{y}{x}$  (hint: a Riccati equation  $S(x) = \frac{1}{x}$ )

最後，(課本例題及歷次小考、作業皆是題庫)，記得提早動筆，準時(11/10)繳交！