

## Homework I

1. Arfken Exercise 7.2.3 Solve

$$\frac{dN}{dt} = -kN^2$$

With initial condition :  $N(0) = N_0$

2. The function  $x(t)$  satisfies

$$\frac{dx}{dt} = 2tx^2, \quad x(0) = 1$$

Solve  $x(t = 2)$ .

3. Solve the equation of  $x(t)$

$$x' + \frac{1}{t}x = 1, \quad x(1) = 3$$