

PPE 5 Differential equations.

Exercise 1.

Show that a solution of the differential equation

$$x' + 2tx = t$$

is given by

$$x(t) = \frac{1}{2} + ce^{-t^2}$$

Exercise 2.

(i). Find the general solution of the differential equation

$$x' + ax = g(t)$$

Hint: multiply the equation by e^{at} and apply the product rule.

(ii). Solve

$$x' - x = t$$