

Names:

Before you begin you should have read and worked through Lab 1.

**All questions should be done by hand (not by computer) and show your steps.**

1. Given the following four  $(x, y)$  points  $(-5, -1)$ ,  $(0, 0)$ ,  $(5, 1)$ ,  $(8, 4)$  find the  $y$ -value at  $x = 3$  using

(a) Linear Interpolation

(b) Quadratic Interpolation

2. Given the equation

$$\frac{\partial y}{\partial t} = y(y + t) \quad (1)$$

write down

(a) forward Euler difference formula

(b) backward Euler difference formula

(c) centered difference formula