MT 3700 Differential Equations
Numerical Techniques - Euler's Method

1. Use Euler's method to calculate an estimated numerical solution to the following Initial Value Problem.

$$\text{IVP: } \frac{dy}{dt} = -y \cdot t, \;\; y(0) = 2$$
$$\text{Step Size: } \Delta t = 1, \;\; 0 \le t \le 3$$

Euler's Method Formulas:

$t_{k+1} =$ _____

$y_{k+1} =$ _____

$f(t_k, y_k) =$ _____

k	t_k	y_k	$f(t_k, y_k) \cdot \Delta t$
0			
1			
2			
3			

2. Use Euler's method to calculate an estimated numerical solution to the following Initial Value Problem.

$$\text{IVP: } \frac{dy}{dt} = -y \cdot t, \quad y(0) = 2$$

$$\text{Step Size: } \Delta t = 0.5, \quad 0 \le t \le 3$$

Euler's Method Fomulas:

$t_{k+1} =$ _____

$y_{k+1} =$ _____

$f(t_k, y_k) =$ _____

k	t_k	y_k	$f(t_k, y_k) \cdot \Delta t$
0			
1			
2			
3			
4			
5			
6			

3. Use Euler's method to calculate an estimated numerical solution to the following Initial Value Problem.

$$\text{IVP: } \frac{dy}{dt} = (3-y)(y+1), \quad y(0) = 0$$

$$\text{Step Size: } \Delta t = 0.5, \quad 0 \le t \le 5$$

Euler's Method Fomulas:

$t_{k+1} =$ _____

$y_{k+1} =$ _____

$f(t_k, y_k) =$ _____

k	t_k	y_k	$f(t_k, y_k)$
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10