

Consider the following IVP:

$$\frac{dy}{dt} = ty \text{ where } y(0) = 3.$$

Your goal is to find (either approximately or exactly) the value of  $y$  when  $t = 1$ . Do this in as many ways as possible, showing your work and explaining your methods clearly. For any recursive process you use, you should carry out at least 4 iterations.