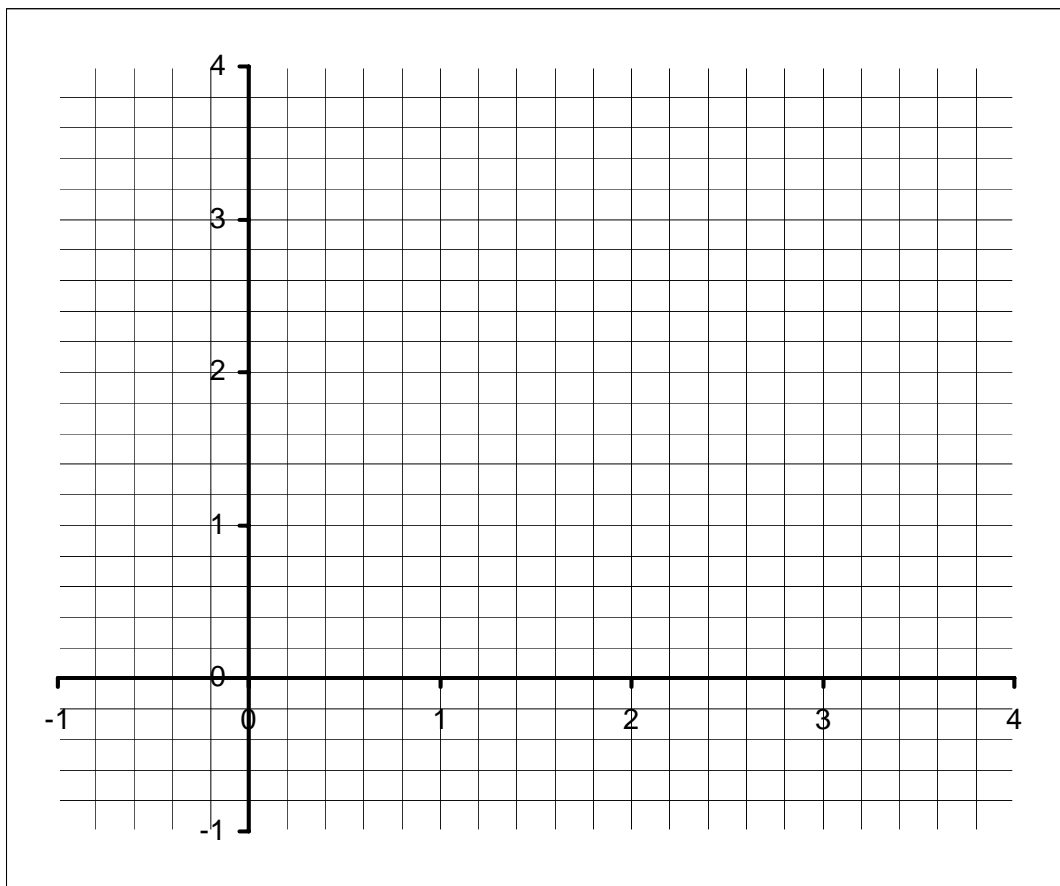


INTRODUCTION TO EULER'S METHOD

You are going to use Euler's Method, with increments of 0.5, to draw an approximation to the solution to the differential equation $\frac{dy}{dx} = x - y$ that has the initial condition $y(0) = 3$.

1. Starting at the point $(0,3)$, compute the slope of the tangent line.
2. Draw a tangent line with this slope at $(0,3)$. Extend it to the point where $x = 0.5$. Estimate the y-coordinate.
3. Using $x = 0.5$ and the y-coordinate you found in step 2, compute the slope of the new tangent line. (Remember that $\frac{dy}{dx} = x - y$ gives the slope of the tangent line at any point.)
4. Draw a new tangent line at the point where $x = 0.5$ and extend it to the point where $x = 1$. Again, estimate the y-coordinate.
5. Using $x = 1$ and the y-coordinate you found in step 4, compute the slope of the third tangent line.
6. Draw the tangent line from the point where $x = 1$ to the point where $x = 1.5$, approximate the new y-coordinate, find a new slope and draw a new tangent line.
7. Repeat this process at $x = 2$, $x = 2.5$, and $x = 3$.



You now

have a curve that approximates a function $y(x)$ that is the solution to the initial-value problem $\frac{dy}{dx} = x - y$, $y(0) = 3$. From your graph, estimate the value of $y(3)$.