Euler's Method Exercises*
Math 112

1. Suppose that y is a function of x whose derivative is given by $y' = \dfrac{y}{x^2}$ and that $y = -\dfrac{1}{2}$

 when $x = 1$. Use Euler's method with $\Delta x = .1$ to approximate the value of y when $x = 2$.
 Fill in the table below with the appropriate values and **plot a graph** of your results.

Old point		slope at old point	Change in y	new x	new y
old x	old y	y'(old point)	$\Delta y = \text{slope} \cdot \Delta x$	old $x + \Delta x$	old $y + \Delta y$

Graph:

*This worksheet is adapted from a worksheet written by Carol Schumacher.

2. Suppose that y is a function of t whose derivative is given by $y' = 3y^2$ and that $y = -1$ when $t = 0$. Use Euler's method with $\Delta t = \frac{1}{2}$ to approximate the value of y when $t = 3$. Then take $\Delta t = -\frac{1}{2}$ and approximate the value of y when $t = -2$.

Old point		slope at old point	Change in y	new t	new y
old t	old y	$y\,'$(old point)	$\Delta y = \text{slope} \cdot \varDelta t$	old $t + \varDelta t$	old $y + \Delta y$

Old point		slope at old point	Change in y	new t	new y
old t	old y	$y\,'$(old point)	$\Delta y = \text{slope} \cdot \varDelta t$	old $t + \varDelta t$	old $y + \Delta y$

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