## Online Math 3321

## Alternate Assignment 2

Use the Alternate EMCF link inside the EMCF tab to submit your answers. Note that all values must be accurate to 4 digits after the decimal.

1. Use Euler's method with a step size of 0.1 to approximate $y(1.2)$ where $y$ solves $y^{\prime}=x-y^{2}, y(1)=2$.
2. Use Euler's method with a step size of 0.1 to approximate $y(0.3)$ where $y$ solves $y^{\prime}=x-y^{-2}, y(0)=1$.
3. Give the slope of the line segment in the direction field for $y^{\prime}=x-y^{2}$ at the point $(-1,1)$.
4. Suppose $k$ is a constant, and the solution to $\frac{d y}{d x}=k y, y(0)=1$ satisfies $y(1)=3$. Give the value of $k$.
5. A metal ball with initial temperature of $30^{\circ} C$ is dropped into a large tank filled with water that is kept at the constant temperature of $90^{\circ}$ $C$. If the temperature of the ball increases $2^{\circ} C$ in the first minute, give the temperature of the ball 30 minutes later.

## Do not include the units in your answer.

