

# Math 3120-001: Practice Test two

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Your Name:.....

**Problem 1**

Use Euler's method with step size  $h = 0.1$  to approximate the solution to the initial value problem

$$\frac{dy}{dx} = xy, y(0) = 1.$$

at the points  $x = 0.1, 0.2$ .

**Problem 2**

Determine whether the equation is exact. If it is then solve it.

$$(2x + y)dx + (x - 2y)dy = 0.$$

**Problem 3**

Determine whether the equation is exact. If it is then solve it.

$$(\tan(y) - 2)dx + (x \sec(y) + \frac{1}{y})dy = 0.$$

**Problem 4**

Use Improved Euler's method with step size  $h = 0.1$  to approximate the solution to the initial value problem

$$\frac{dy}{dx} = xy, y(1) = 1.$$

at the points  $x = 1.1, 1.2$ .

**Problem 5**

Use Runge Kutta method with step size  $h = 0.1$  to approximate the solution to the initial value problem

$$\frac{dy}{dx} = xy, y(1) = 1.$$

at the points  $x = 1.1, 1.2$ .