

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

$$\frac{dy}{dx} = y^2, y(0) = 1.$$

at the points $x = .1, .2$.

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.

$$(e^x \sin(y) - 3x^2)dx + (e^x \cos(y) + \frac{y^{-2/3}}{3})dy = 0.$$

Problem 4

Determine whether the equation is exact. If it is not then solve it by using integrating factor.

$$(3x^2 + y)dx + (x^2y - x)dy = 0.$$

Problem 5

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

$$\frac{dy}{dx} = y^2, y(1) = 1.$$

at the points $x = 1.1, 1.2$.

Problem 6

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

$$\frac{dy}{dx} = y^2, y(1) = 1.$$

at the points $x = 1.1, 1.2$.