Assignment Math45-Module-03-Exercises due 09/17/2020 at 11:59pm PDT

We have $y = Cx^2$ is a 1-parameter family of solutions for the differential equation y'x - 2y = 0. Which of the following is a solution for the initial value problem consisting of the differential equation y'x - 2y = 0 and initial condition y(2) = 12.

$$12 = y(2) = C(2)^{2}$$
• A. $y = 12x^{2}$ $\rightarrow 12 = C(4)$

$$\therefore C = 3$$

- C. $y = Cx^2$
- D. $y = 2x^2$

Answer(s) submitted:

(incorrect)

2. (1 point) Consider the initial value problem The general

$$2ty' = 4y, \quad y(-2) = 4.$$

Find the value of the constant C and the exponent r $y = Ct^r$ is the solution of this initial value problem. Thus the state of the st

 $y = \frac{16t^{-2}}{\text{Answer(s) submitted:}} \text{ help (formulas)} 2trCt^{-2} - 4Ct^{-2} = 0$ $\Rightarrow 2rCt^{-2} - 4Ct^{-2} = 0$ $\Rightarrow 2rCt^{-4} - 4Ct^{-2} = 0$ $\Rightarrow 2rCt^{-4} - 4Ct^{-2} = 0$ $\Rightarrow 2rCt^{-4} - 4Ct^{-2} = 0$ 2r-4=0 > r=2

Take y=Ct^r than y'=rCt⁻¹
The subsitute y,y' yields

3. (1 point) Suppose $y' = f(x,y) = \frac{xy}{\cos(x)}$. (1) $\frac{\partial f}{\partial y} = \frac{\mathbf{X}}{\mathbf{X}}$ help (formulas) _ help (formulas)

(2) Since the function f(x, y) is

 Choose continuous not continuous

at the point (0,0), the partial derivative $\frac{\partial f}{\partial v}$

- Choose exists
 - does not exist

and is Choose continuous

• not continuous

at and near the point (0,0), the solution to y'=f(x,y)

• Choose exists and is unique

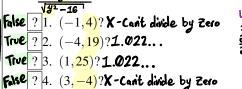
does not exist

near y(0) = 0

Answer(s) submitted:

(incorrect)

4. (1 point) For the differential equations $\frac{dy}{dx} = \sqrt{y^2 - 16}$ does the existence/uniqueness theorem guarantee that there is a solution to this equation through the point by = \(\frac{1}{3} \) = \(\frac{1}{3} \)



Note: To answer this question, compute the partial derivative of $f(x,y) = \sqrt{y^2 - 16}$ with respect to y and check if f(x,y) and $\frac{\partial f}{\partial y}$ exists at the given points. If they do, then the conditions of the theorem are satisfied at the given points.

Answer(s) submitted:

(incorrect)

5. (1 point) Enter \underline{a} value for π

Answer(s) submitted:

(incorrect)

1