
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 $y(2) = 12$.

- A. $y = 12x^2$
- B. $y = 3x^2$
- C. $y = Cx^2$
- D. $y = 2x^2$

---

2. (1 point) Consider the initial value problem

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

Find the value of the constant C and the exponent r so that $y = Ct^r$ is the solution of this initial value problem.
$y =$ ________ help (formulas)

---

3. (1 point) Suppose $y' = f(x,y) = \dfrac{xy}{\cos(x)}$.

(1) $\dfrac{\partial f}{\partial y} =$ ____________ help (formulas)

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

- Choose
- continuous
- not continuous

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

- 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 $y(0) = 0$

---

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

$\boxed{?}$ 1. $(-1,4)$?
$\boxed{?}$ 2. $(-4,19)$?
$\boxed{?}$ 3. $(1,25)$?
$\boxed{?}$ 4. $(3,-4)$?

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.

---

5. (1 point)
Enter a value for π

____

Generated by ©WeBWorK, http://webwork.maa.org, Mathematical Association of America