



Dashboard > My courses > EMAT102L: Linear Algebra and Ordinary Differential Equations (EVEN SEMESTER 2021-22) G5 > 9 June - 15 June > Class Test 3

**Started on** Monday, 13 June 2022, 2:00 PM

**State** Finished

**Completed on** Monday, 13 June 2022, 2:20 PM

**Time taken** 19 mins 47 secs

**Grade** 2.00 out of 10.00 (20%)

**Question 1**

Incorrect


Mark 0.00 out of  
2.00

Let  $\Omega = \{(x, y) \in \mathbb{R}^2 : |x - 1| \leq 2, |y - 3| \leq 4\}$  be a rectangular domain. Consider the initial value problem (IVP):

$$\frac{dy}{dx} = 4xy, \quad y(1) = 3.$$

Then which among the below statement is correct about the above IVP.

Select one:

- ☐ a. The IVP has a unique solution in  $|x| \leq 1$ .
- ☒ b. The IVP has no solutions in  $|x| \leq 1$ .
-  ☐ c. The IVP has infinitely many solutions in  $|x| \leq 1$ .
- ☐ d. The IVP has a unique solution in the interval  $[0, 2]$ .

Your answer is incorrect.

The correct answer is: The IVP has a unique solution in the interval  $[0, 2]$ .

**Question 2**

Incorrect

Mark 0.00 out of

2.00

A curve passes through the point  $\left(x = \frac{\pi}{4}, y = \frac{\pi}{4}\right)$  and satisfies the differential equation

$\frac{dy}{dx} = \frac{1 + \cos 2y}{1 - \cos 2y}$ . Then the equation that describes the curve is

Select one:

☐ a.  $\cos(x - y) = 2 \sin x \cos y$ .

☒ b.  $\cot y + \tan x = 4$ .



☐ c.  $\sin(x - y) = 2 \sin x \cos y$ .

☐ d.  $\cot x + \tan y = 1$ .

Your answer is incorrect.

The correct answer is:  $\cos(x - y) = 2 \sin x \cos y$ .

**Question 3**

Incorrect

Mark 0.00 out of

2.00

The solution of  $x \frac{dy}{dx} + y = x^4$  with the condition  $y(1) = \frac{6}{5}$  is

Select one:

☐ a.  $x^4 - 4xy + 4 = 0$ .

☐ b.  $x = \frac{x^4}{5} + \frac{1}{y}$ .

☐ c.  $x^5 - 5xy + 5 = 0$ .

☒ d.  $y = \frac{x^4}{4} + \frac{1}{x}$ .



Your answer is incorrect.

The correct answer is:  $x^5 - 5xy + 5 = 0$ .

**Question 4**

Incorrect

Mark 0.00 out of

2.00

The general solution of the differential equation  $\frac{dy}{dx} = \sin(x + y)$ , with  $c$  as a constant, is

Select one:

- ☐ a.  $\tan(x + y) - \sec(x + y) = y + c$ .
- ☒ b.  $\cot(x + y) - \sec(x + y) = x + c$ .
- ☐ c.  $\sin(x + y) - 1 = (x + c) \cos(x + y)$ .
- ☐ d.  $\tan(x + y) + \sec(x + y) = x + c$ .

Your answer is incorrect.

The correct answer is:  $\sin(x + y) - 1 = (x + c) \cos(x + y)$ .

**Question 5**

Correct

Mark 2.00 out of

2.00

For the differential equation  $\frac{dy}{dx} + 7x^2y = 0$ , if  $y(0) = \frac{3}{7}$ , then the value of  $y(1)$  is

Select one:

☒ a.  $\frac{3}{7}e^{-\frac{7}{3}}$



☐ b.  $\frac{7}{3}e^{-\frac{7}{3}}$

☐ c.  $\frac{7}{3}e^{-\frac{3}{7}}$

☐ d.  $\frac{3}{7}e^{-\frac{3}{7}}$

Your answer is correct.

The correct answer is:  $\frac{3}{7}e^{-\frac{7}{3}}$