



Started on

 **Thursday, 29 February 2024, 2:21 PM**

State

 **Finished**


Completed on

 **Saturday, 9 March 2024, 7:00 AM**

Time taken

 **8 days 16 hours**

Grade

 **10.00 out of 10.00 (100%)**

## Question 1

Complete

Mark 1.00 out of 1.00

Find the general solution for the differential equation.

$$\frac{dy}{dx} = y^2(4 - e^x)$$

Select one:

☐ A.  $y = \frac{k}{4x - e^x}$

☒ B.  $y = \frac{1}{e^x - 4x + C}$

☐ C.  $y = 4x - e^x + C$

☐ D.  $y = \sqrt[3]{\frac{3}{4x - e^x + C}}$

## Question 2

Complete

Mark 1.00 out of 1.00

Solve  $(e^{2y} - y \cos xy) dx + (2xe^{2y} - x \cos xy + 2y) dy = 0$ .

- ☒ a.  $xe^{2y} - \sin xy + y^2 + c = 0$
- ☐ b.  $xe^{3y} - \sin xy + y^2 + c = 0$
- ☐ c.  $xe^{3y} - \cos xy + y^2 + c = 0$
- ☐ d.  $xe^{2y} - \sin xy + y^3 + c = 0$

### Question 3

Complete

Mark 1.00 out of 1.00

Solve

$$xy \, dx + (2x^2 + 3y^2 - 20) \, dy = 0$$

☐

a.

$$\frac{1}{2}x^4y^2 + \frac{1}{2}y^6 - 5y^4 = c$$

☐

b.

$$\frac{1}{2}x^3y^4 + \frac{1}{2}y^6 - 5y^4 = c$$

☐

c.

$$\frac{1}{2}x^4y^2 + \frac{1}{2}y^6 - 5y^5 = c$$

☒

d.

$$\frac{1}{2}x^2y^4 + \frac{1}{2}y^6 - 5y^4 = c$$

## Question 4

Complete

Mark 1.00 out of 1.00

Find the particular solution for the initial value problem.

$$(4x + 4)y = \frac{dy}{dx}; y(0) = 1$$

Select one:

- ☒ A.  $y = e^{2x^2 + 4x}$
- ☐ B.  $y = e^{2x^2 + 4x + 1}$
- ☐ C.  $y = e^{4x^2 + 4x}$
- ☐ D.  $y = e^{4x^2 + 4x + 1}$

## Question 5

Complete

Mark 1.00 out of 1.00

Find the particular solution for the initial value problem.

$$x \frac{dy}{dx} = 4x^2 e^{2x}; y(0) = 16$$

Select one:

- ☐ A.  $y = 2xe^{2x} + 16$
- ☐ B.  $y = 4xe^{2x} - e^{2x} + 17$
- ☒ C.  $y = 2xe^{2x} - e^{2x} + 17$
- ☐ D.  $y = 4xe^{2x} - 2e^{2x} + 18$

## Question 6

Complete

Mark 1.00 out of 1.00

Find the general solution for the differential equation.

$$x^2 \frac{dy}{dx} + xy = 4x^4 + 7x^7, x > 0$$

Select one:

- ☐ A.  $y = x^4 + x^7 + \frac{C}{x}$
- ☐ B.  $y = x^4 + x^7 + C$
- ☒ C.  $y = x^3 + x^6 + \frac{C}{x}$
- ☐ D.  $y = k \left( x^3 + x^6 + \frac{1}{x} \right)$

## Question 7

Complete

Mark 1.00 out of 1.00

Solve the differential equation subject to the initial condition.

$$x \frac{dy}{dx} + (1+x)y = 1; y(5) = 2$$

Select one:

- ☒ A.  $y = \frac{1 + 9e^{5-x}}{x}$
- ☐ B.  $y = \frac{1 + 11e^{7-x}}{x}$
- ☐ C.  $y = \frac{1 + 9e^{-5-x}}{x}$
- ☐ D.  $y = \frac{1 + 10e^{5-x}}{x}$

## Question 8

Complete

Mark 1.00 out of 1.00

Solve the differential equation subject to the initial condition.

$$\frac{dy}{dx} + 10xy - e^{-5x^2} = 0; y(0) = 4$$

Select one:

- ☐ A.  $y = (x + 4)e^{-5x}$
- ☐ B.  $y = xe^{-5x} + 4$
- ☒ C.  $y = (x + 4)e^{-5x^2}$
- ☐ D.  $y = xe^{-5x^2} + 4$

## Question 9

Complete

Mark 1.00 out of 1.00

Solve the differential equation.

$$-x^3y' + 2x^2y = y^2$$

Select one:

- ☐ A.  $y = \frac{x^2}{\ln x - C}$
- ☒ B.  $y = \frac{x^2}{\ln x + C}$
- ☐ C.  $y = \frac{x}{\ln x + C}$
- ☐ D.  $y = \frac{x}{\ln x - C}$

## Question 10

Complete

Mark 1.00 out of 1.00

Solve the differential equation.

$$3x^2y' - 2xy = y^{-3}$$

Select one:

☐ A.  $y^4 = \frac{-4}{11x} + Cx^{11/3}$

☐ B.  $y^2 = \frac{-4}{11x} + Cx^{11/3}$

☒ C.  $y^4 = \frac{-4}{11x} + Cx^{8/3}$

☐ D.  $y^2 = \frac{-4}{11x} + Cx^{8/3}$

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