Unit 13 - Week 11:

Assignment 11

The due date for submitting this assignment has passed. Due on 2019-04-17, 23:59 IST.

As per our records you have not submitted this assignment.

1) The differential equation corresponding to the family of curves \( y = c(x - c) \) where \( c \) is an arbitrary constant is

\[
(y')^{k_1} = 4y(x y' - 2y)^{k_2}.
\]

So, \( k_1 + k_2 = \) __________

- a. 1
- b. 2
- c. 3
- d. 4

No, the answer is incorrect.

Score: 0

Accepted Answers: d.

2) The solution of differential equation \((2x + y - 3)dy = (x + 2y - 3)dx\)

\[
(x - y)^p = c(x + y - 2),
\]

where \( c \) is an arbitrary constant and \( p \) is

- a. 3
- b. 3/2
- c. 2
- d. 2/3

No, the answer is incorrect.

Score: 0

Accepted Answers: d.
3) Integrating factor of differential equation

\[(2xy^4e^y + 2xy^2 + y)dx + (x^2y^4e^y - x^2y^2 - 3x)dy = 0\]

is \[\underline{\text{___________}}\].

a. \(-1/y^4\)
b. \(1/y^4\)
c. \(4/y\)
d. \(-4/y\)

No, the answer is incorrect.
Score: 0

4) Given differential equation is

\[(1 + x^2) \frac{dy}{dx} + 2xy - 4x^2 = 0\]

If \(e^k\) is the integrating factor, then \(k = \underline{\text{___________}}\).

a. \(\ln(1 + x^2)\)
b. \(\frac{1}{2}\ln(1 + x^2)\)
c. \(\ln(1 + x)\)
d. \(\frac{1}{2}\ln(1 + x)\)

No, the answer is incorrect.
Score: 0

5) Let

\[y = \frac{A(x)}{x} = \log x + C,\]

where \(C\) is an arbitrary constant, is a solution of

\[(x^3 - x) \frac{dy}{dx} - (3x^2 - 1)y = x^3 - 2x^3 + x.\]

Then, \(A\) is

a. \(x - x^2\)
b. \(x^2 - x\)
c. \(x^3 - x\)
d. \(x - x^2\)
6) \( y^n \) is the integrating factor of
\[ y \sec^2 x \, dx + \left[ 3 \tan x - \left( \frac{\sec y}{y} \right)^2 \right] \, dy = 0. \]
for \( n = \) _____.
   a. 2  
   b. 3  
   c. 4  
   d. 1

No, the answer is incorrect.
Score: 0
Accepted Answers: c.

7) Equation \((\alpha xy^3 + y \cos x) \, dx + (x^2y^2 + \beta \sin x) \, dy = 0\) is exact if
   a. \( \alpha = \frac{3}{5}, \beta = 1 \)  
   b. \( \alpha = 1, \beta = \frac{2}{2} \)  
   c. \( \alpha = \frac{2}{3}, \beta = 1 \)  
   d. \( \alpha = 1, \beta = \frac{3}{4} \)

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
Differential equation \( xdy - ydx - 2x^2dx = 0 \) has the solution

a. \( y + x^3 = C_1x \)
b. \( -y + x^3 = C_1x \)
c. \( y - x^2 = C_1x \)
d. \( y^3 - x^3 = C_1x \)

No, the answer is incorrect.
Score: 0
Accepted Answers: b.

9)
If \( 2\int vdx = v - \log_e(1 + v) + A \), where \( v \) is a function of \( x \) and \( v(0) = 1 \). Then \( 1 + v = \) __________.

a. \( 2e^x \)
b. \( e^x \)
c. \( e^{2x} \)
d. \( 2e^{2x} \)

No, the answer is incorrect.
Score: 0
Accepted Answers: d.

10)
If \( x^r \) is an integrating factor of \( (x + y^3)dx + 6xy^2dy = 0 \), then \( r = \) __________.

a. \( -1/2 \)
b. \( 1/2 \)
c. \( -3/2 \)
d. \( 3/2 \)

No, the answer is incorrect.
Score: 0
Accepted Answers: a.