

Section 1.2 - Initial-Value Problems

1. The solution of the initial value problem $y' = 3y, y(0) = 2$ is $y = ce^{3x}$, where $c =$
 (Select the correct answer.)

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

ANSWER:

a

2. The solution of the initial value problem $y' = 2y + x, y(1) = \frac{1}{4}$ is $y = -\frac{x}{2} - \frac{1}{4} + ce^{2x}$, where $c =$
 Select the correct answer.

- a. 2
- b. e^{-2}
- c. e^{-1}
- d. $\frac{e^{-2}}{2}$
- e. 1

ANSWER:

b

3. The initial value problem $y' = \sqrt{y^2 - 9}, y(x_0) = y_0$ has a unique solution guaranteed by Theorem 1.1 if
 Select the correct answer.

- a. $y_0 = 3$
- b. $y_0 = -3$
- c. $y_0 = 5$
- d. $y_0 = 0$
- e. $y_0 = 1$

ANSWER:

c

4. The solution of the initial value problem $y' = 5y, y(1) = 3$ is $y = ce^{5x}$, where $c =$
 (Select the correct answer.)

- a. $3e^{-5}$
- b. 3

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c. $3e^5$

d. $-3e^5$

e. -3

ANSWER:

a

5. The solution of the initial value problem $y' = 2y + x$, $y(-1) = \frac{1}{2}$ is $y = -\frac{x}{2} - \frac{1}{4} + ce^{2x}$, where $c =$
(Select the correct answer.)

a. 2

b. $\frac{e^2}{4}$

c. e^2

d. $\frac{e^2}{2}$

e. 1

ANSWER:

b

6. The initial value problem $y' = \sqrt{y^2 - 16}$, $y(x_0) = y_0$ has a unique solution guaranteed by Theorem 1.1 if
Select the correct answer.

a. $y_0 = 4$

b. $y_0 = -4$

c. $y_0 = 0$

d. $y_0 = 8$

e. $y_0 = 1$

ANSWER:

d