Ordinary Differential Equations

Prepared by Salkaro

Question 1 (2)

Solve the following first-order differential equation:

$$\frac{dy}{dx} + 3y = 6e^{-2x}$$

Question 2 (2)

Solve the first-order differential equation:

$$\frac{dy}{dx} - 2y = e^{3x}$$

Question 3 (3)

Solve the second-order homogeneous differential equation:

$$y'' - 4y' + 4y = 0$$

Question 4 (3)

Solve the Bernoulli differential equation:

$$\frac{dy}{dx} + 2y = y^3 e^{-x}$$

Question 5 (3)

Solve the second-order homogeneous differential equation:

$$y'' + 9y = 0$$

Question 6 (4)

Solve the non-homogeneous differential equation:

$$y'' - y = e^x$$

Question 7 (4)

Solve the non-homogeneous differential equation:

$$y'' + 4y = \cos(2x)$$

Question 8 (4)

Solve the Bernoulli differential equation:

$$\frac{dy}{dx} + y = y^2 e^x$$

Question 9 (5)

Solve the non-homogeneous differential equation:

$$y'' - 3y' + 2y = e^{2x}$$

Question 10 (5)

Solve the Bernoulli differential equation:

$$\frac{dy}{dx} - y = y^3 e^{-2x}$$

Question 11 (2)

Solve the first-order differential equation:

$$\frac{dy}{dx} - 4y = 8e^{2x}$$

Question 12 (2)

Solve the first-order differential equation:

$$\frac{dy}{dx} + 5y = 10e^{-3x}$$

Question 13 (3)

Solve the second-order homogeneous differential equation:

$$y'' + 6y' + 9y = 0$$

Question 14 (3)

Solve the Bernoulli differential equation:

$$\frac{dy}{dx} + 3y = y^2 e^{-x}$$

Question 15 (3)

Solve the second-order homogeneous differential equation:

$$y'' - 2y' + 5y = 0$$

Question 16 (4)

Solve the non-homogeneous differential equation:

$$y'' + y = \sin(x)$$

Question 17 (4)

Solve the non-homogeneous differential equation:

$$y'' - 4y = 8e^{2x}$$

Question 18 (4)

Solve the Bernoulli differential equation:

$$\frac{dy}{dx} - 2y = y^3 e^x$$

Question 19 (5)

Solve the non-homogeneous differential equation:

$$y'' + 4y' + 4y = e^{-2x}$$

Question 20 (5)

Solve the Bernoulli differential equation:

$$\frac{dy}{dx} + y = y^4 e^{-x}$$