

MTH101: Tutorial 8

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Exercise 1.1

Solve the initial value problem.

$$1. \quad y' + 2y = 4 \cos 2x, \quad y\left(\frac{\pi}{4}\right) = 3.$$

Exercise 2.1

Use reduction of order to solve the following second order linear ODE.

$$1. \quad xy'' + 2y' + xy = 0, \quad y_1 = (\cos x)/x$$

Exercise 2.2

Solve the initial value problems for the following equations.

1. $y'' + 4y' + (\pi^2 + 4)y = 0, \quad y\left(\frac{1}{2}\right) = 1, \quad y'\left(\frac{1}{2}\right) = -2,$

2. $y'' + 2k^2y' + k^4y = 0 \quad y(0) = 1, \quad y'(0) = -k^2.$

Exercise 2.3

Solve the initial value problem.

$$1. \quad y'' + 6y' + 9y = e^{-x} \cos 2x, \quad y(0) = 1, \quad y'(0) = -1.$$