

MAT 2384-Practice Problems on Homogeneous Euler-Cauchy Equations

For each of the following ODEs, Find the General Solution. If an initial condition is given, find also the corresponding particular solution.

$$1. \ x^2y'' - 6y = 0$$

$$2. \ x^2y'' - 7xy' + 16y = 0$$

$$3. \ x^2y'' - xy' + 2y = 0$$

$$4. \ 2x^2y'' + 4xy' + 5y = 0$$

$$5. \ 10x^2y'' - 20xy' + 22.4y = 0$$

$$6. \ 100x^2y'' + 9y = 0$$

$$7. \ x^2y'' - 4xy' + 6y = 0, \quad y(1) = 1, \quad y'(1) = 0$$

$$8. \ x^2y'' + 3xy' + y = 0, \quad y(1) = 4, \quad y'(1) = -2$$

$$9. \ x^2y'' - 2xy' + 2.25y = 0, \quad y(1) = 2.2, \quad y'(1) = 2.5$$

$$10. \ xy'' + 4y' = 0, \quad y(1) = 12, \quad y'(1) = -6$$