

5.3 Exercises

Problem 1 Solve the initial value problem: $y^{(3)} + 10y^{(2)} + 25y' = 0$, w/init-conds: $y(0) = 3$, $y'(0) = 4$, and $y''(0) = 5$.

Problem 2 Find a general solution of $y^{(3)} + 3y'' + 4y' - 8y = 0$.

Problem 3 Find a **linear homogeneous constant coefficient** DEQ with the given general solution.

$$y(x) = (A + Bx + Cx^2) \cos 2x + (D + Ex + Fx^2) \sin 2x$$

Problem 4 DEQs with complex coefficients.

Use the quadratic formula to solve the following. *Note in each case that the roots are not complex conjugates.*

a) $x^2 + ix + 2 = 0$

b) $x^2 - 2ix + 3 = 0$