

Suggested problems 15

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1. Find the general solution of the given differential equations

(a) $y'' + 3y' + 2y = 0$;

(b) $4y'' - 9y = 0$.

2. Find the solution of the given initial value problem

$$6y'' - 5y' + y = 0, \quad y(0) = 4, \quad y'(0) = 0.$$

3. Consider a second order linear differential equation

$$3y'' - 15y' + 18y = 0.$$

(a) Find the general solution of the equation.

(b) Find the solution satisfying $y(0) = 0, y'(0) = a$.

(c) For what value(s) of a is the $\lim_{t \rightarrow +\infty} y(t) = 0$?

4. Find a differential equation whose general solution is $y = c_1e^{2t} + c_2e^{-3t}$.