

4.6 Variation of Parameters

Find a general solution to the equations using the method of variation of parameters.

1. $y'' - 2y' + y = t^{-1}e^t$

2. $y'' + 16y = \sec 4t$

4.7 Variable-Coefficient Equations

1. Find a general solution to the Cauchy-Euler equation for $t > 0$.

(a) $t^2 \frac{d^2 y}{dt^2} + 2t \frac{dy}{dt} - 6y = 0$

(b) $t^2 \frac{d^2 y}{dt^2} + 5t \frac{dy}{dt} + 4y = 0$

2. Find a general solution to the Cauchy-Euler equation for $t < 0$: $t^2 y''(t) + 3ty'(t) + 5y(t) = 0$.

3. Find a general solution to the equation for $t > 0$: $t^2 y'' - 4ty' + 6y = t^3 + 1$.

4. Find a second linearly independent solution using reduction of order:
 $t^2 y'' + 6ty' + 6y = 0$, $t > 0$; $y_1(t) = t^{-2}$.