## 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:  $t^2y''(t) + 3ty'(t) + 5y(t) = 0$ .

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

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