Homogeneous Equations with Constant Coefficients- HW Problems

In problems 1-5 find the general solution to the differential equation.

1. $y'' + 8y' + 16y = 0$

2. $y'' + 4y' + 20y = 0$

3. $y^{(3)} + 3y'' = 0$

4. $y^{(4)} + 6y'' + 9y = 0$

5. $y^{(4)} + 2y^{(3)} + y'' = 0.$

In problems 6-8 solve the initial value problem.

6. $y'' + 4y' + 13y = 0, \quad y(0) = 2, \quad y'(0) = 5$

7. $2y^{(3)} - y'' - y' = 0, \quad y(0) = 9, \quad y'(0) = 1, \quad y''(0) = 4.$

8. $y^{(3)} + y'' = 0, \quad y(0) = 6, \quad y'(0) = 1, \quad y''(0) = 1$

9. $y = e^{2x}$ is one solution to $y^{(3)} + 4y'' + y' - 26y = 0$. Find the general solution.