Linear Analysis II Set 5

1. Solve $x^2y'' + 5xy' + y = 0$.

2. Solve $x^2y'' + 5xy' + 6y = 0$.

3. Solve $4x^2y'' + y = 0$.

4. One solution to $y'' - xy' + y = 0$ is $y = x$. Find a second linearly independent solution. This second solution may involve an integral which cannot be evaluated, so the answer may involve an integral.

5. Find the general solution to $x^2y'' - 6y = x^2$. (Solve $x^2y'' - 6y = 0$ and then use reduction of order.)