Choose and solve 2 questions only.
1.) (5pts) Given that \( y_1 = 1 \) is a solution to the DE \( (x^2 - 1)y'' + 2xy' + y = 0 \), find a second solution.
2.) (5pts) Solve the DE \( 2y'' - y'' - y = 0 \).
3.) (5pts) Find the Cauchy-Euler equation whose auxiliary equation has the roots \( m = 1 + i \), \( m = 1 - i \) and \( m = 1 \).
4.) (5pts) Find one solution to the DE \( xy'' + y = 0 \).