Problem 1. (2 points.) Determine the singular points of the differential equation
\((x^3 - 9x)y'' - 5xy' + 6y = 0\).

Problem 2. (3 points.) Classify at least two of the singular points obtained in question 1 as being regular singular points or otherwise.

Problem 3. (3 points.) \(x=0\) is a regular singular point of the differential equation
\(2x^2y'' + 3xy' + (2x - 1)y = 0\). Find roots of the indicial equation and show that the roots do not differ by an integer.