Name: ID #: Section #:

Q1) Find two power series solutions of the differential equation $(x^2+1)y'' - 6y = 0$.

Q2) Consider the differential equation $x^2y'' + \left(\frac{5}{3}x - x^2\right)y' - \frac{1}{3}y = 0$.

(a) Use the general form of the indicial equation to find the indicial roots of the singularity $x = 0$.

(b) Without solving, discuss the number of series solutions you would expect to find using the method of Frobenius.