KFUPM – Department of Mathematics & Statistics
MATH202 – Term 181
Quiz **5**A (Duration: 25 Minutes)

Name: _____ ID #: _____ Section: 03

Q1 (***5 Pts***) Find two power series solutions of the DE $(x-1)y'' + y' = 0$ about the ordinary point $x = 0$. (Give the first three non-zero terms for each series solution)

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

a) Show that $x = 0$ is a *regular singular* point of the DE.

b) Find the *indicial roots* of the singularity.

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