22M:100 (MATH:3600:0001) Quiz 3
April 16, 2013

[20] 1.) Find all singular points of the given equation and determine whether each one is regular or irregular.

1a.) $x^2y'' + 2y' + 3xy = 0$

1b.) $(x+1)y'' + 3xy' + (x+2)y = 0$

[30] 2.) Find the largest possible domain for $f(x) = \sum_{n=0}^{\infty} \frac{nx^n}{4^n}$

[50] 3.) Solve $\mathbf{x}' = \begin{pmatrix} 2 & 0 \\ 0 & 0 \end{pmatrix} \mathbf{x}$