Math 202 (142)
Quiz 4 (6, 8.1, 8.2)

Name: ID #: Section #: 01 Serial #:

---

1. Solve the system $X' = AX$, where $A = \begin{bmatrix} 2 & -1 \\ 2 & 4 \end{bmatrix}$.

2. Solve the IVP: $X' = AX, X(0) = \begin{pmatrix} 3 \\ 0 \end{pmatrix}$ where $A = \begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$.

3. Find the minimum radius of convergence of power series solutions about $x = 1$ for the equation $(x^2 - 2x + 10)y'' + xy' = 0$.

4. Without solving, discuss the number of series solutions about the regular singular point $x = 0$ you would expect to find using the method of Frobenius for the equation $xy'' + y' + y = 0$.

5. Find the first four terms of a power series solution of the equation $y'' + xy = 0$ about the point $x = 0$.