Elementary Power Series Solutions- HW Problems

In problems 1-3 find a power series solution to the differential equation. Determine the radius of convergence of the power series solution.

1. $y' = 3y$

2. $(x - 1)y' + 2y = 0$

3. $y'' + 4y = 0.$

In problems 4 and 5 find a recurrence relation for c_n in terms of c_0 and c_1. Use the initial conditions to find c_0 and c_1 and hence find the power series solution to the initial value problem.

4. $y'' - 9y = 0,$ $y(0) = 4,$ $y'(0) = 0$

5. $y'' + 9y = 0,$ $y(0) = 0,$ $y'(0) = 6.$