Presentation Problems 5

In this presentation you will study the ordinary differential equation $y' = y^r$ for your value of r. You are to solve the differential equation and discuss some properties of your solution, determine y'' and discuss its meaning, set up a polynomial set of differential equations that show how to get a power series for y. (You should either show how to get the power series for y or explain in detail how one can do that.)

1. $r = \dfrac{1}{2}$
2. $r = \dfrac{3}{2}$
3. $r = \dfrac{1}{3}$
4. $r = -\dfrac{1}{3}$