

Math 3280 Worksheet 41: Power series solutions

Group members (2 to 4): \_\_\_\_\_

- (1) Using a power series around  $t = 0$  of the form  $y(t) = \sum_{n=0}^{\infty} c_n t^n$ , find the recurrence relation for the  $c_i$  if  $y$  satisfies  $y'' + ty' + y = 0$ , and the first four terms of the series if  $y(0) = C_0$  and  $y'(0) = C_1$ .

- (2) Now compute the radius of convergence  $\rho$  using the fact that for a recurrence of the form  $c_{n+2} = g(c_n)$ ,  $\rho^2 = \lim_{n \rightarrow \infty} \left| \frac{c_n}{c_{n+2}} \right|$ .