Quiz 2

1. Determine a lower bound for the radius of convergence of the series solutions to

$$(1 + x^2)y'' + 2xy' + 4x^2y = 0$$

about the point $x = -\dfrac{1}{2}$.

2. Find and classify (as regular or irregular) all singular points

$$2x(x - 2)^2 y'' + 3xy' + (x - 2)y = 0$$

3. Solve the Euler equation $2x^2y'' + 3xy' - y = 0, \ x > 0$