

Name: _____ ID #: _____ Serial #: _____

1. [8pts] Given that $y_1 = x$ is a solution of $y'' - \frac{2x}{1+x^2}y' + \frac{2}{1+x^2}y = 0$, find a second solution y_2 of the DE and write down the general solution.

2. [8pts] The DE $x^2y'' - 5xy' + 9y = x^2 + 1$ has as particular solution a polynomial of degree 2. Find this particular solution and write down the general solution of the DE.