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.