

Name: \_\_\_\_\_ ID #: \_\_\_\_\_ Serial #: \_\_\_\_\_

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1. [8pts] Given that  $y_1 = x$  is a solution of  $y'' - \frac{4x}{1+2x^2}y' + \frac{4}{1+2x^2}y = 0$ , find a second solution  $y_2$  of the DE and write down the general solution.

2. [8pts] The DE  $x^2y'' - xy' + y = x^3 + 2$  has as particular solution a polynomial of degree 3. Find this particular solution and write down the general solution of the DE.