

NAME:

Home Work 10.
MAP 2302 - Differential Equations

Solve the following ODE using the Reduction of Order:

1. $(x^2 + 1)y'' - 2xy' + 2y = 0$; $y_1(x) = x$ Ans: $y = c_1x + c_2(x^2 - 1)$.

2. $x^2y'' - 4xy' + 4y = 0$; $y_1(x) = x$ Ans: $y = c_1x + c_2x^4$.

3. $y'' - y = e^x$ Ans: $y = y_c + y_p = c_1 + c_2 + \frac{1}{2}xe^x$.

4. $y'' + y = \csc x$ Ans: $y = y_c + y_p = c_1 \cos x + c_2 \sin x - x \cos x + \sin x \ln |\sin x|$.

5. $2x^2y'' + xy' - y = x$; $y_1(x) = x$ Ans: $y = y_c + y_p = c_1x + c_2x^{1/2} + \frac{x}{3} \ln x$.