MA205 - Integral Calculus
Lesson 49: Analytic Solutions II

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1. For parts (a) and (b) below, consider the differential equation $4y'' - 4y' + y = 0$.

   (a) Find a general solution to the above differential equation.

   (b) If $y(0) = 1$ and $y'(0) = -1.5$, find the particular solution to the initial value problem.

2. Solve the differential equation $3y'' = 5y'$.

3. For parts (a) and (b) below, consider the differential equation $y'' + 2y' + 5y = 0$.

(a) Find a general solution to the above differential equation.

(b) If $y\left(\frac{\pi}{2}\right) = 1$ and $y'(0) = 0$, find the particular solution to the initial value problem. (Hint: Use Mathematica to help you! This is do-able by hand, but it gets messy!)