## Problem 1

Determine the general solution, $Y_H$, to $Y' = AY$ when $A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \end{bmatrix}$.

## Problem 2

For the previous problem, determine the solution given the initial condition $Y(1) = \begin{bmatrix} -1 \\ 5 \end{bmatrix}$.

## Problem 3

Determine the general solution, $Y_H$, to $Y' = AY$ when $A = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 1 \end{bmatrix}$.

## Problem 4

For the previous problem, determine the solution given the initial condition $Y(0) = \begin{bmatrix} 2 \\ 3 \\ 0 \end{bmatrix}$.