

HOMEWORK 22
DIFFERENTIAL EQUATIONS
DUE 10-29

Show your work!

- (1) Consider the constant-coefficient system of homogeneous, linear differential equations with coefficient matrix $A = \begin{pmatrix} 1 & 2 \\ 3 & 6 \end{pmatrix}$.
- (a) Find the general solution. (HINT: Don't overthink this! The algorithm is just the same as we've been doing all along.)
 - (b) Find the solution Y that satisfies the initial condition $Y(0) = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$.
 - (c) Find the solution Y that satisfies the initial condition $Y(0) = \begin{pmatrix} 5 \\ -2.5 \end{pmatrix}$.
- **Three** book problems: #3.4.3, 10, 23.