

Repeated Eigenvalues

Repeated eigenvalues can also cause difficulties when trying to find the general solution. These aren't too common in real-world scenarios, but they can happen and help to illustrate what happens as eigenvalues get closer and closer together.

Example. Analyze the system

$$\vec{x}' = \begin{bmatrix} 6 & -8 \\ 2 & -2 \end{bmatrix} \vec{x}.$$

Defective Eigenvalues

The main issue here is that we have a defective eigenvalue.

Guessing a Second Solution

We've solved a similar issue like this before.