

Quiz 11

1. (5 points) The 2×2 matrix A is symmetric with two eigenvalues 5 and -10 . One eigenvector of A is $\begin{pmatrix} 1 \\ -2 \end{pmatrix}$ corresponding to the eigenvalue -10 . Compute A .

2. (5 points) Consider $y'' - y' - 6y = 0$. (a) Give the general solution for $y(t)$. (b) Solve the initial value problem for $y(0) = 5$, $y'(0) = 0$.

(For fun) Given a homogeneous linear differential equation with constant coefficients, what can you say about $\lim_{t \rightarrow \infty} y(t)$ for a solution $y(t)$? Think about the different cases of roots of an auxiliary polynomial, both real and non-real.