

Quiz 10, Math 246, Professor David Levermore
Thursday, 19 April 2018

Your Name:

Discussion Instructor (circle one):	Kilian Cooley	Corry Bedwell	Thien Ngo
Discussion Time (circle one):	8:00	9:00	10:00
			11:00

No books, notes, calculators, or any electronic devices.

Show your reasoning for full credit. Good luck!

(1) [4] Let $\mathbf{A} = \begin{pmatrix} -1 & -2 \\ 4 & -5 \end{pmatrix}$. Compute $e^{t\mathbf{A}}$.

(2) [2] The matrix $\mathbf{B} = \begin{pmatrix} 1 & 2 \\ 0 & 3 \end{pmatrix}$ has eigenvalues 1 and 3.

Find an eigenvector associated with the eigenvalue 3.

(3) [4] The 2×2 matrix $\mathbf{C}$ has the eigenpairs

$$\left(2, \begin{pmatrix} 1 \\ -1 \end{pmatrix} \right), \quad \left(-1, \begin{pmatrix} 1 \\ 1 \end{pmatrix} \right).$$

Give a fundamental matrix for the system $\mathbf{y}' = \mathbf{C}\mathbf{y}$.