The following exercises are from the corresponding sections of the UC Berkeley custom edition of Lay, Nagle, Saff, & Snider, Linear Algebra and Differential Equations. Note that the section numbers and problem numbers ARE NOT the same as in Lay, Linear Algebra.

Exercises 2.1: 9, 11, 15, 16, 17, 20, 21, 27, 34

Exercises 2.2: 21, 25, 33, 34

Exercises 2.3: 7, 18, 19, 27 ,36, 38

Exercises 3.1: 11, 13, 41

Additional Problems:

1. Let A and B be $n \times n$ matrices. Find a formula for $(A + B)^2$ in terms of A^2, B^2, AB, and BA.
2. Let $I_2 = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ and $J_2 = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$. Show that the sum and product of two matrices $aI_2 + bJ_2$ and $cI_2 + dJ_2$ again has the same form, and that the formulas for the sum and product match those for complex numbers $a + bi$ and $c + di$.
3. Let $A = \begin{pmatrix} 2 & 0 & 2 \\ 0 & 1 & -1 \\ 1 & 1 & -1 \end{pmatrix}$. Solve the matrix equation $AX = B$ for a 3×2 matrix X. Hint: think about the expansion by columns of the matrix product AX.
4. Prove the Invertible Matrix Theorem. You may refer to any theorems we have done earlier in the class. (The solution to this is in the book, but it is a good exercise to try to do this on your own, without looking it up!)