3.1, 3.2, 3.3, 5.1, 5.2, and 5.6 think-share-pair-compare

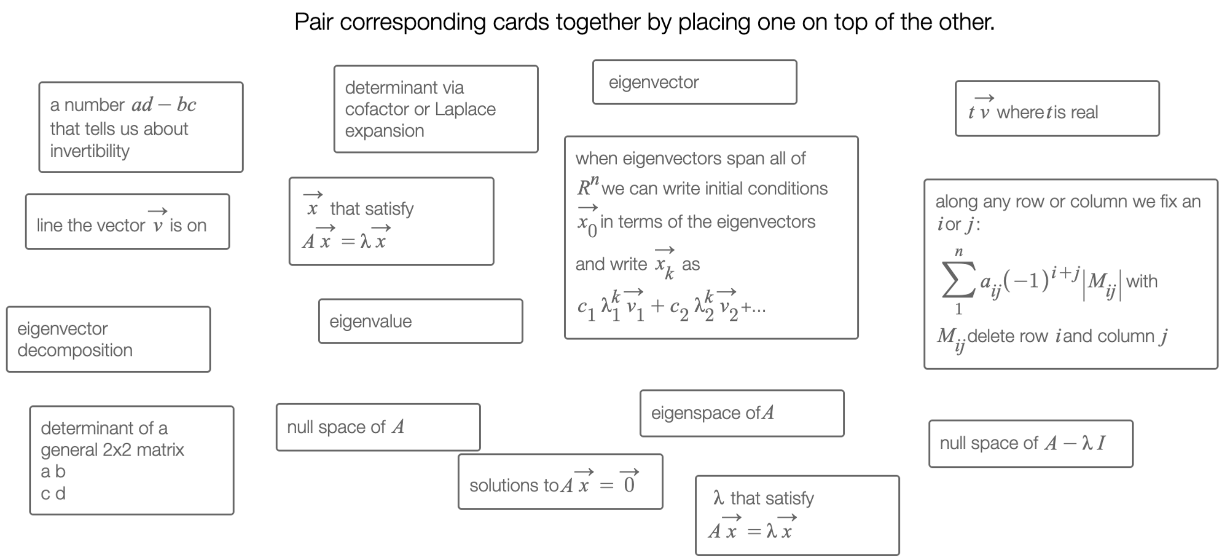
Part A: Post your responses in the think-share-pair-compare forum.

Part B: Respond separately to at least two of your classmates postings in a meaningful way that helps them understand. Try to select classmates who don't already have replies. Use their preferred name (like Dr. Sarah is mine), with something new that justifies your position on (at least) one of the questions. Don't just say, "Yeah, I agree." Instead, say, "Yes preferred name, but we also need to consider..." Or, "Preferred name, I had something different because..." You might pose questions, answer questions, extend ideas, or compare and contrast your responses and summarize what you chose and why.

1. List your preferred name.
2. Which of the following are true about the matrix $A = \begin{bmatrix} 1 & 0 \\ k & 1 \end{bmatrix}$
   a) determinant of A is 1
   b) A is a vertical shear matrix
   c) When we multiply $AB_{2\times n}$ then we have applied $r_2' = kr_1 + r_2$ to B, because A is the elementary matrix representing that row operation
   d) all of the above
   e) two of the above
3. Which of the following statements is true?
   a) If a square matrix has two identical rows then its determinant is zero.
   b) If the determinant of a matrix is zero, then the matrix has two identical rows.
   c) both
   d) none of the above
4. A reflection matrix has eigenvalue(s)
   a) $\lambda = 1$ on the line of reflection
   b) $\lambda = -1$ perpendicular to the line of reflection
   c) $\lambda = -2$ for some line
   d) all of the above
   e) two of the above
5. In Maple we execute
   A := Matrix([[21/40,3/20],[-3/16,39/40]]);
   Eigenvectors(A); $\begin{bmatrix} \frac{1}{3} \\ \frac{9}{10} \end{bmatrix}, \begin{bmatrix} 4 & \frac{7}{5} \\ 1 & 1 \end{bmatrix}$

   Say that A represents the changes from one year to the next in a system of foxes (x-value) and rabbits (y-value). For most initial conditions, what happens to the system in the longterm?

6. To help you solidify, pair corresponding cards together by placing one on top of the other at [link on ASULearn] (sign in to Desmos using your ASU Google account or similar). Next, use the feedback to keep sorting until you match them all correctly. Afterwards, select one or more pairings to describe and briefly report back in some way (for example, you could comment on what most interested you, surprised you, or what you had a question on).



7. These sections include the following learning outcomes. Reflect on one or more of these—personal connections, experiences and/or questions you have.

   i. compute determinants, eigenvalues, eigenvectors, and eigenspaces

   ii. connect determinants and eigenvalues to earlier material, including the inverse matrix theorem

   iii. apply algorithms including the cofactor (Laplace) expansion to find determinants

   iv. investigate the connection of determinants to area and volume

   v. determine eigenvalues, eigenvectors, eigenspaces, and bases for eigenspaces

   vi. link determinants, eigenvalues and eigenvectors to earlier material, including systems of matrix and vector equations, matrix algebra, the inverse matrix theorem, nullspaces, and linear transformations

   vii. characterize trajectories and long-term behavior of dynamical systems using eigenvalue decompositions

   viii. link algebra and geometry of the above, explore applications, and interpret statements