Solidify & Make Connections: Problem Sets 30%

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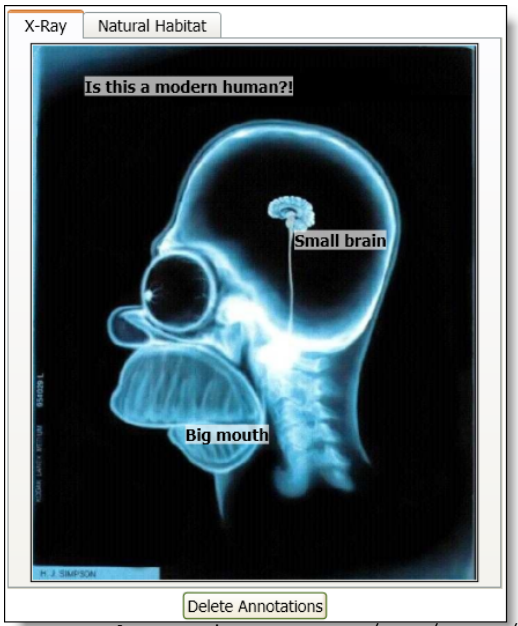
- annotations/explanations of by-hand + Maple work using only what we have covered so far and in the language of our class. collate into one PDF, like Preview or PDFSam



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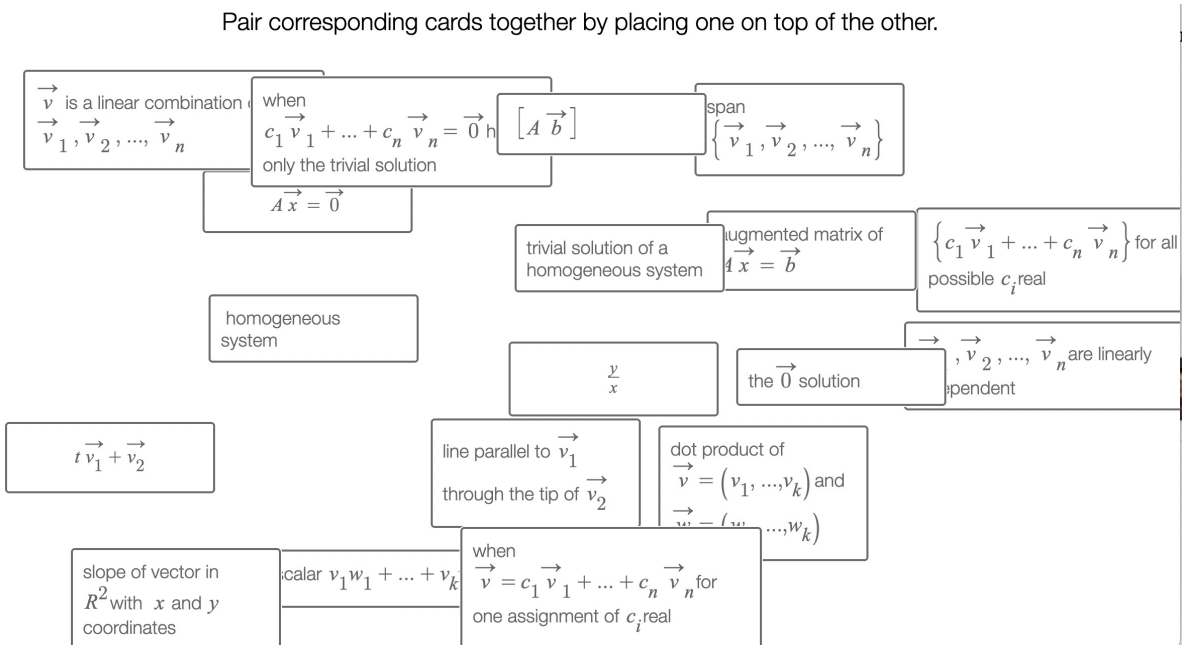
Card Sort 1

I asked you to select one or more pairings from the card sort I created and prepare to briefly report back in some way.

Share with your group (for example, you could comment on what most interested, challenged or surprised you, or what you had a question on) and prepare to share something from your group's discussions with the class when we come back together



Think-Share-Pair-Compare #1

Evelyn Boyd Granville

second black woman we know of to earn a PhD in mathematics

...this was the most interesting job of my lifetime—to be a member of a group responsible for writing computer programs to track the paths of vehicles in space

Let x = rabbits, y= chickens. In Evelyn Boyd Granville's favorite challenge from the 1.1 intro video, $x + y = 17, 4x + 2y = 48$. Given a different number of heads and feet, must a solution for the numbers of rabbits and chickens always exist? Why or why not. Discuss and prepare to share when I bring us together.

Think-Share-Pair-Compare #2

2. To check whether or not a vector is in the span of a set of vectors, it suffices (in all cases) to see if there are any multiples. Select one of the following:
   a) True and I can explain why or quote an item from the glossary, another ASULearn item, or page number from the book.
   b) False and I can provide a counterexample or a correction.

Respond on our usual pollev if you have tech.

Think-Share-Pair-Compare #3

3. Which of the following are true? Select one of the following:

   a) $\left\{ \begin{bmatrix} 1 \\ 0 \end{bmatrix} \right\}$ is linearly independent

   b) span of $\left\{ \begin{bmatrix} 1 \\ 0 \end{bmatrix} \right\}$ is $\mathbb{R}^2$

   c) both a) and b)

   d) neither

Respond on our usual pollev if you have tech.

Review Practice 1 #1

In the review 1 practice quiz you were to review and solidify the language of linear algebra as well as computations and conceptual understanding as you responded in your notes.

a) By hand, use strict Gaussian to reduce $\begin{bmatrix} -2 & 1 & 1 & 0 \\ 2 & -1 & -3 & 0 \\ -4 & 2 & 2 & 0 \end{bmatrix}$ to row echelon form.

b) Circle the pivots.

c) Write the solutions in parameterized vector form and show work.

Compare and contrast your responses with your group.

Review Practice 1 #2, #3 and #4

2. Show work to multiply $\begin{bmatrix} 5 & 8 \\ -2 & 3 \end{bmatrix} \begin{bmatrix} -1 \\ 1 \end{bmatrix}$.

3. How can we check for linear independence of 3 vectors in $\mathbb{R}^3$?

4. If the span of a set of vectors is $s \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix} + t \begin{bmatrix} 3 \\ -7 \\ 5 \end{bmatrix}$, then what is the geometry of the span?

Compare and contrast your responses with your group.

Review Practice 1 #5 and #6

5. If we use the implicitplot3d command in Maple on the equations corresponding to the rows of the augmented matrix $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 5 & 6 & 7 \end{bmatrix}$, what would we see?

2 _____ intersecting in a _____

6. First, if we use spacecurve commands in Maple on the vectors corresponding to the columns of the coefficient matrix of this augmented matrix $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 5 & 6 & 7 \\ 0 & 0 & 0 & 9 \end{bmatrix}$, and display them together, what would we see?

Next, if we use use a spacecurve command in Maple on the equal column of the augmented matrix above and display it with the other column vectors, would it be in the same space as the others or not?

Compare and contrast your responses with your group.

Review Practice 1 #7 and #8

7. Can $A\vec{x} = \vec{0}$ ever be inconsistent? Why or why not?
8. What can we say about the columns of $\begin{bmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{bmatrix}$?

Compare and contrast your responses with your group.

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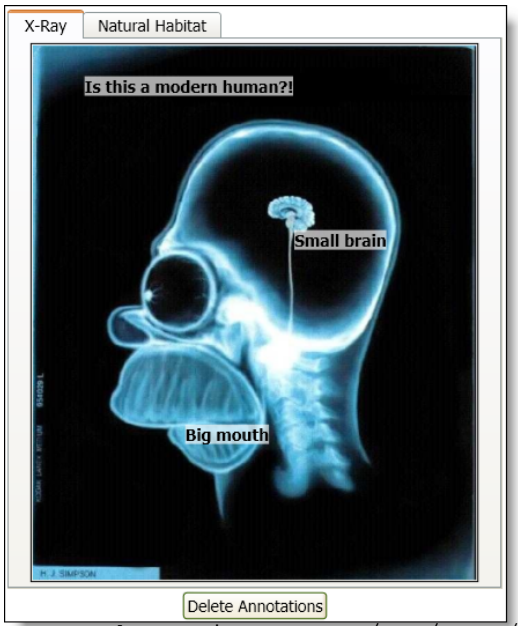

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