MATH 316D W07

DD1 Individual Quiz

This quiz has most of the answers currently keyed incorrectly, please make sure that these are the correct answers.

1. **Delete**, previously question 1.
2. **Add**. "Given the following matrix find the solution by hand using Gaussian Elimination, and choose the answer that most accurately represents your work."

$$\begin{bmatrix} 1 & 3 & 2 & 5 \\ 0 & 1 & -4 & 1 \\ 0 & 0 & 1 & 7 \end{bmatrix}$$

   (a) $\begin{bmatrix} -96 & 29 & 7 \end{bmatrix}^T \implies$ **Correct**
   (b) $\begin{bmatrix} 7 & \frac{3}{2} & -\frac{13}{4} \end{bmatrix}^T$
   (c) $\begin{bmatrix} \frac{37}{5} & -\frac{8}{5} & \frac{6}{5} \end{bmatrix}^T$
   (d) None of the above.

3. **Keep**, previously question 2. $\implies$ The correct answer is **False**.
4. **Keep**, previously question 3. $\implies$ The correct answer is **False**.
5. **Change**, (previously question 4) to, "If a system has a free variable present, then the system has infinitely many solutions. Is this system linearly independent or linearly dependent?"

   (a) Dependent $\implies$ **Correct**
   (b) Independent

6. **Keep**, previously question 5. $\implies$ The correct answer is **False**.
7. **Keep**, previously question 6. $\implies$ The correct answer is **False**.
8. **Change** to, "A consistent system is one with at least one solution."

   (a) True $\implies$ **Correct**
   (b) False

9. **Add**. "Given the following system of linear equations, create a matrix that represents this system, and then choose the answer that best represents your work."

$$\begin{aligned} x_1 - x_3 &= 4 \\ -x_2 + 5x_3 &= 1 \\ 2x_1 - 4x_2 + 3x_3 &= 2 \end{aligned}$$

   (a) $\begin{bmatrix} 1 & -1 & 4 & 0 \\ -1 & 5 & 1 & 0 \\ 2 & -4 & 3 & 2 \end{bmatrix}$
   (b) $\begin{bmatrix} 1 & 0 & -1 & 0 \\ 0 & -1 & 5 & 0 \\ 2 & -4 & 3 & 0 \end{bmatrix}$
   (c) $\begin{bmatrix} 1 & 0 & -1 & 4 \\ 0 & -1 & 5 & 1 \\ 2 & -4 & 3 & 2 \end{bmatrix} \implies$ **Correct**

(d) None of the above.

10. **Add**. "From the previous question, is this linear system homogenous or non-homogeneous?"

    (a) Homogenous
    (b) Non-homogeneous
    (c) There is not enough information to tell.

DD2 Group Quiz

This quiz is currently keyed correctly.

1. **Keep**.
2. **Add**. "Determine whether the given set S is linearly independent or linearly dependent."
   $S = \{\mathbf{v}_1, \mathbf{v}_2\}$ where $\mathbf{v}_1 = \begin{bmatrix}1 & 0\end{bmatrix}^T$ and $\mathbf{v}_2 = \begin{bmatrix}0 & 1\end{bmatrix}^T$.

   (a) S is linearly dependent.
   (b) S is linearly independent. $\implies$ **Correct**
   (c) There is not enough information to tell.
3. **Keep**, previously question 2.
4. **Keep**, previously question 3.
5. **Keep**, previously question 4.
6. **Delete**, previously question 5.
7. **Keep**, previously question 6.
8. **Keep**, previously question 7.
9. **Keep**, previously question 8.
10. **Keep**, previously question 9.

DD3 Weekly Quiz

This quiz is currently keyed correctly.

1. **Keep**.
2. **Keep**.
3. **Keep**.
4. **Keep**.
5. **Keep** but please fix the format of the information; in i-Learn words don't appear in the right places. Question six's information is a good template.
6. **Keep**.
7. **Keep** but please fix the submission box; in i-Learn it appears below where it should.
8. **Keep**.
9. **Keep** and please make sure that the answer is along the lines of, "No, S cannot span $\mathbb{R}^3$, because, by virtue of *Theorem 1.6.1* in order for S to span $\mathbb{R}^3$ it must have a pivot position in every row, which it cannot."
10. **Keep** and please make sure that an appropriate answer is as follows: $\vec{x}_h = x_3 \begin{bmatrix}1\\1\\1\end{bmatrix}$, $\vec{x}_p = x_3 \begin{bmatrix}1\\1\\1\end{bmatrix} + \begin{bmatrix}2\\-1\\0\end{bmatrix}$, and therefore; $\vec{x}_g = 2x_3 \begin{bmatrix}1\\1\\1\end{bmatrix} + \begin{bmatrix}2\\-1\\0\end{bmatrix} = \begin{bmatrix}2x_3+2\\2x_3-1\\2x_3\end{bmatrix}$. Note that the solution may be parameterized and thus x_3 can be of the form t, s, r, etc.