Math 3333 homework

1. (due 2/1) 1.1 # 2, 7, 8, 11, 12, 17

2. (2/1) Be able to do any of 1.2 # 1 and 4-12. Turn in 4 and 5 (use the method of elimination using the operations of type I, II, and III), 9, 10 (solve $\begin{bmatrix}3 & 0\\0 & 2\end{bmatrix} = a\begin{bmatrix}1 & 0\\0 & 1\end{bmatrix} + b\begin{bmatrix}1 & 0\\0 & 0\end{bmatrix}$), 11, 12

3. (2/1) Be able to do any of 1.3 # 1-24, 30-34, 36-38. Turn in 4, 7, 9, 22-24, 28, 37, 38.

4. (2/12) [Note: if a problem does not explicitly say "Be able to do ... Hand in ...", then all problems are to be handed in. For example, all the following problems from Section 1.4 are to be handed in.] 1.4 # 3, 5, 17, 22, 23, 32, 34 (write $A = \begin{bmatrix}a & b\\c & d\end{bmatrix}$, and see what $AB = BA$ tells you for the four choices of $B = \begin{bmatrix}1 & 0\\0 & 0\end{bmatrix}, \begin{bmatrix}0 & 1\\0 & 0\end{bmatrix}, \begin{bmatrix}0 & 0\\1 & 0\end{bmatrix}, \begin{bmatrix}0 & 0\\0 & 1\end{bmatrix}$), 36 (if $\mathbf{x}_1$ and $\mathbf{x}_2$ are solutions, then $A\mathbf{x}_1 = \mathbf{0}$ and $A\mathbf{x}_2 = \mathbf{0}$, now use Theorem 1.2(c)), 38 (similar to 36)

5. (2/12) 1.5 # 15 (solve $\begin{bmatrix}x & y\\z & w\end{bmatrix}\begin{bmatrix}1 & 2\\2 & 1\end{bmatrix} = \begin{bmatrix}1 & 2\\2 & 1\end{bmatrix}\begin{bmatrix}x & y\\z & w\end{bmatrix}$), 16, 31 (suppose you have $\begin{bmatrix}2 & 3\\4 & 6\end{bmatrix}\begin{bmatrix}x & y\\z & w\end{bmatrix} = \begin{bmatrix}1 & 0\\0 & 1\end{bmatrix}$ and see what would happen), 33 (solve $\begin{bmatrix}1 & 3\\5 & 2\end{bmatrix}\begin{bmatrix}x & y\\z & w\end{bmatrix} = \begin{bmatrix}1 & 0\\0 & 1\end{bmatrix}$, etc., we'll have better ways later), 34, 35 (hint: this is easy), 36 (hint: this is also easy, write $AX = B$ and use A^{-1} to find X as we did in class), 42, 43

6. (2/12) Be able to do any of 1.6 # 1-18 and 20-21. Hand in # 9 (determine whether the linear system $AX = \begin{bmatrix}1\\-1\\2\end{bmatrix}$ has a solution), 10, 11, 15 (compute where the matrix transformation sends $\begin{bmatrix}x\\y\end{bmatrix}$ and figure out the effect on the plane), 16, 17, 18 (determine the solutions of the linear system $AX = w$), 20 $f(u+v) = A(u+v) = Au + Av = \ldots$), 21

7. (2/12) Be able to do any of 2.1 # 1-8. No need to hand any in, as we will be doing this anyway in 2.2.

8. (2/12) Be able to do any of 2.2 # 1-17, 20-21. Hand in # 7(a)(d), 10, 11, 13, 14, 17, 20, 21