AC Math 2
Matrices on the Graphing Calculator WS

Name _____

Given the following matrices, simplify the expressions, no decimals.

$$A=\begin{bmatrix}7 & -2\\ -1 & 0\end{bmatrix} \quad B=\begin{bmatrix}3 & 7\\ -2 & 4\end{bmatrix} \quad C=\begin{bmatrix}1 & -5\\ -3 & 2\end{bmatrix} \quad D=\begin{bmatrix}2 & -3 & 1\\ 4 & 2 & -1\\ -2 & 3 & -3\end{bmatrix}$$

$$E=\begin{bmatrix}4 & 3 & 1\\ -2 & -1 & -1\end{bmatrix} \quad F=\begin{bmatrix}6 & 5 & -2\\ 2 & 4 & -1\\ 3 & 1 & 4\end{bmatrix}$$

1. A + 2B – 3C $\begin{bmatrix}10 & 27\\ 4 & 2\end{bmatrix}$

2. -2(FD) $\begin{bmatrix}-72 & 28 & -14\\ -44 & 2 & -2\\ -4 & -10 & 20\end{bmatrix}$

3. A^2 $\begin{bmatrix}51 & -14\\ -7 & 2\end{bmatrix}$

4. ½(AB) – 2(BC) $\begin{bmatrix}97/2 & 45/2\\ 53/2 & -79/2\end{bmatrix}$

5. (A + B)|C| $\begin{bmatrix}-130 & -65\\ 39 & -52\end{bmatrix}$

6. |C| + |D| ~~24~~ -45

7. C^{-1} $\begin{bmatrix}-2/13 & -5/13\\ -3/13 & -1/13\end{bmatrix}$

8. D^{-1} $\begin{bmatrix}3/32 & 3/16 & -1/32\\ -7/16 & 1/8 & -3/16\\ -1/2 & 0 & -1/2\end{bmatrix}$

9. $F\cdot F^{-1}$ $\begin{bmatrix}1 & 0 & 0\\ 0 & 1 & 0\\ 0 & 0 & 1\end{bmatrix}$

10. 3D – F $\begin{bmatrix}0 & -14 & 5\\ 10 & 2 & -2\\ -9 & 8 & -13\end{bmatrix}$

Write each system as a matrix equation and then solve.

11. $3x+2y=-5$, $4x=2y+10$ $(5/7, -25/7)$

$X=A^{-1}\cdot B$

$\begin{bmatrix}3 & 2\\ 4 & -2\end{bmatrix}\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}-5\\ 10\end{bmatrix}$

$A \quad X = \quad B$

12. $6x+2=y$, $-18x+3y=4$ $6x-y=-2$, $-18x+3y=4$ ∅

$\begin{bmatrix}6 & -1\\ -18 & 3\end{bmatrix}\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}-2\\ 4\end{bmatrix}$

13. $-x+y+z=x$, $-x+2y-3z=-6$, $2x-4y+8z=18$ $-x+y+z=4$ $(1,2,3)$

$\begin{bmatrix}-1 & 1 & 1\\ -1 & 2 & -3\\ 2 & -4 & 8\end{bmatrix}\begin{bmatrix}x\\ y\\ z\end{bmatrix}=\begin{bmatrix}4\\ -6\\ 18\end{bmatrix}$ $\begin{bmatrix}x\\ y\\ z\end{bmatrix}=\begin{bmatrix}1\\ 2\\ 3\end{bmatrix}$

14. $5x+3y+2z=1$, $x-2y-z=-2$, $-5x-2y+2z=11$ $\Rightarrow x-2y+z=2$ $(-1,0,3)$

$\begin{bmatrix}5 & 3 & 2\\ 1 & -2 & 1\\ -5 & -2 & 2\end{bmatrix}\begin{bmatrix}x\\ y\\ z\end{bmatrix}=\begin{bmatrix}1\\ 2\\ 11\end{bmatrix}$