Work each of the following problems as instructed Algebra 2 TEST 2.2 Review

Per



State the dimensions and identify the indicated element of each matrix

1. $\begin{bmatrix} 2 \\ -3 \\ -6 \end{bmatrix}$; a_{21} -3	2.	5 -9 1	-7 3 9	23	$ \begin{array}{c c} & 10 \\ & -2 \\ & 2 \end{array} $; a_{23}	 3.	$\begin{bmatrix} x \\ d \\ p \end{bmatrix}$	$\begin{bmatrix} y & z \\ e & f \\ \hline q & r \end{bmatrix}$: a_{32}	9
							LP	¹ / '	

4. Use the equivalent matrices to solve for each variables.

$$\begin{bmatrix} a & 2b \\ c-2 & d+3 \end{bmatrix} = \begin{bmatrix} 5 & -7 \\ 10 & 10 \end{bmatrix}$$

5. a) Rewrite the data from the table in a matrix where the years are the rows and the categories are the columns.

Unemployment Rates					
	June 1992	June 1996			
Construction	17.6%	9.5%			
Manufacturing	8.3%	5.1%			
Transportation	5.4%	4.5%			
Sales	8.7%	6.4%			
Finance	4.0%	2.6%			
Services	6.6%	5.1%			
Government	3.5%	2.7%			

- (b) Identify $a_{\rm 21}$ and what it represents.
- (c) Identify a_{16} and what it represents.

Solve each matrix..



6.
$$X - \begin{bmatrix} 0 & 0 & 1 \\ 1 & -2 & -2 \\ -2 & -3 & 3 \end{bmatrix} = \begin{bmatrix} 3 & 12 & 1 \\ -6 & -4 & 2 \\ -3 & 6 & 7 \end{bmatrix} + \begin{bmatrix} 0 & 0 & 1 \\ 1 & -2 & -2 \\ -2 & -3 & 3 \end{bmatrix}$$

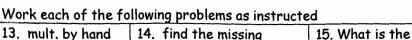
7. Are these matrices are inverses of each other.

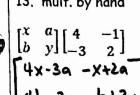
$$\begin{bmatrix}
1 & 3 \\
2 & 8
\end{bmatrix}
\begin{bmatrix}
4 & -1.5 \\
-1 & .5
\end{bmatrix}$$
Mult = [1 0] yes

Use the provided matrices to find the following, if possible. You may use your graphing calculator.

12.	AD	by	hand
-	;	٦	L







Find the determinant and inverse of each matrix, if it exists. 18 by hand and 19 using the calculator

18.
$$\begin{bmatrix} 6 & 2 \\ 2 & 1 \end{bmatrix}$$
 $\begin{bmatrix} 1 & -2 & 2 \\ -2 & 6 \end{bmatrix}$ = $\begin{bmatrix} 1 & -2 \\ -1 & 3 \end{bmatrix}$

$$\begin{bmatrix} 1 & 3 & -1 \\ 0 & 1 & -2 \\ -1 & 2 & 1 \end{bmatrix}$$
 Def = 10

Solve for matrix X. Use inverse matrices on the calculator

20.
$$\begin{bmatrix} 3 & 5 \\ 6 & 2 \end{bmatrix} X = \begin{bmatrix} -2 & 6 \\ 4 & 12 \end{bmatrix}$$

21.
$$\begin{bmatrix} 1 & 1 & -1 \\ 0 & 2 & -1 \\ 1 & 3 & 0 \end{bmatrix} X = \begin{bmatrix} -1 \\ 2 \\ 1 \end{bmatrix} \quad X = A \cdot B$$

23. Write as a matrix equation. Then solve by inverse

$$X = \begin{bmatrix} 1 & 2 \\ -1 & 0 \end{bmatrix}$$

22. Write as a matrix equation. Then solve by 3x + 5y = 4

inverse matrices.
$$3x+5y=4$$
$$2x-7y=13$$

$$\begin{bmatrix} S \\ Y \end{bmatrix} = \begin{bmatrix} Y \\ Y \end{bmatrix} = \begin{bmatrix} Y \\ Y \end{bmatrix}$$

$$A^{-1} \cdot B = \begin{bmatrix} 3 \\ -1 \end{bmatrix}$$

$$\begin{cases} x + 5z = -13 \\ 2x + 2y - z = -1 \end{cases}$$

matrices.

$$\begin{bmatrix} 3 - 1 & 2 \\ 1 & 0 & 5 \\ 2 & 2 - 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ 2 \end{bmatrix} = \begin{bmatrix} 4 \\ -13 \\ -1 \\ B \end{bmatrix}$$

$$A - 1 B = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$

$$A^{-1} \cdot B = \begin{bmatrix} z \\ -4 \\ -3 \end{bmatrix}$$

24. Write a system of equations, then write a matrix equation to solve.

x = yellow chalk Y = white On Monday, Mr. Graff bought 8 packs of yellow

chalk and 4 packs of white chalk for \$7.40. On Tuesday, Mrs. Graff went to the same store and bought 6 packs of yellow and 12 packs of white chalk for \$10.50. How much does each type of chalk cost?

Jenny has 10 fewer quarters than dimes and five fewer nickels than quarters. The total value of the coins is \$4.75. Write a system of 3 equations and solve for the number of nickels, dimes, and quarters Jenny has in her possession.

$$5n + 10d + 25Q = 475$$

 $d - Q = 10$ (5,20,10)
 $-n + Q = 5$

$$\begin{bmatrix}
5 & 10 & 25 \\
0 & 1 & -1 \\
-1 & 0 & 1
\end{bmatrix}
\begin{bmatrix}
0 \\
0 \\
0
\end{bmatrix}
=
\begin{bmatrix}
475 \\
10 \\
5
\end{bmatrix}$$

$$N=5 & 20 = D \quad Q=10$$

Solve the following system of equations using elimination and substitution. SHOW YOUR WORK.

27.
$$-4x - 2y - z = 15 \times 3 \times 7$$

 $12x + 6y + 3z = 45$
 $2x + 5y + 7z = -29$

$$3a-2b+4c=35$$
 $-8a+2b-10c=-72$
 $-5a-bc=-37$

$$-12a + 3b - 15c = -108$$

$$5a - 3b + 3c = 31$$

$$-7a - 12c = -77$$

$$\frac{10a + 12c = 74}{-74 - 12c = -77}$$

$$3a = -3$$

$$-6c = -42$$

$$-6 = -6$$

$$C = 7$$

$$3(-1) - 2b + 4(7) = 35$$

$$-3 - 2b + 28 = 35$$

$$-2b + 25 = 35$$

$$-25 - 25$$

$$-12x - 6y - 32 = 45$$

$$12x + 6y + 3z = 45$$

$$0 = 0 + 3$$

$$-28x - 14y - 72 = 105$$

$$2x + 5y + 72 = -29$$

$$-26x - 9y = 76 F$$

No Sol.