

Algebra 2 Chapter 4 Review Name _____

(26 pts total) = 1-14: 1pt each 14-17: 3pts each

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

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

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

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

⑤ Find the area of the triangle with vertices $A(0,0)$, $B(4,1)$, and $C(2,6)$

⑥ Solve for x and y
 $\begin{bmatrix} x & 2 \\ -1 & 3 \end{bmatrix} \begin{bmatrix} 5 \\ -3 \end{bmatrix} = \begin{bmatrix} 4 \\ y \end{bmatrix}$

⑦ Evaluate the determinant

$$\begin{vmatrix} 10 & -5 \\ 4 & -2 \end{vmatrix}$$

⑧ $\begin{bmatrix} -2 & 3 & -1 \\ 4 & 5 & 2 \\ 0 & -1 & 6 \end{bmatrix}$

Find the inverse without a calculator (show work)

⑨ $\begin{bmatrix} -4 & 5 \\ -6 & 8 \end{bmatrix}$

⑩ Solve the matrix equation

$$\begin{bmatrix} 3 & -1 & 2 \\ 2 & 0 & 5 \\ 1 & 3 & 1 \end{bmatrix} X = \begin{bmatrix} 7 \\ 14 \\ 0 \end{bmatrix}$$

(Write answer with fractions not decimals.)

⑪ Use an inverse matrix to solve the linear system.

$$\begin{aligned} 2x + 6y &= 3 \\ -4x - 3y &= -3 \end{aligned}$$

(a) First write the matrix equation

(b) Solve using your graphing calculator using an inverse matrix.
 (Write order pair in fraction not decimal form)

- Find the determinant.
 (12) Then find the inverse. (If there is no inverse, explain why)

$$\begin{bmatrix} 0 & 0 \\ -6 & 7 \end{bmatrix}$$

(13)
$$\begin{bmatrix} 6 & 5 & 3 \\ 0 & 0 & 0 \\ -1 & 4 & 1 \end{bmatrix}$$

- (14) Use Cramer's Rule to solve (must show work)
- $$\begin{aligned} 7x - 4y &= -3 \\ 2x + 5y &= -7 \end{aligned}$$

- For each of the following stories, (a) Identify the variables and write down what each represents.
 (3pts each) (b) Translate the story into a system of linear equations, in standard form
 (c) Rewrite the system of equations as a matrix equation
 (d) Solve & write with appropriate units.

(15) **Selling Cards** The senior class is selling boxed greeting cards. Birthday cards sell for \$5.00 a box, while thank you cards sell for \$7.00 a box. You sold 4 more boxes of birthday cards than thank you cards; your total sales amounted to \$152.00. How many boxes of each kind did you sell? (Lesson 4.5)

(16) **Pewter Alloys** Pewter is an alloy that consists mainly of tin. It also contains small amounts of antimony and copper. Three pewter alloys contain percents of tin, antimony, and copper as show in the matrix below. You have 1296 pounds of tin, 69 pounds of antimony, and 35 pounds of copper. How much of each alloy can you make?

PERCENTS ALLOY BY WEIGHT

	X	Y	Z
Tin	0.90	0.94	0.92
Antimony	0.08	0.03	0.06
Copper	0.02	0.03	0.02

(17) You have \$10,000 to invest in two types of stock. The expected annual returns for the stocks are shown in the table below. You want the overall annual return to be 8%.

Investment	Expected return
Stock A	10%
Stock B	6%

(18) **Deli Platter** You want to order a deli platter for a sports banquet. You need 12 pounds of meat and cheese. You want twice as much meat as cheese on the platter and the same amount of ham and turkey. The price per pound is \$4.95 for ham, \$6.99 for turkey, \$7.99 for roast beef, and \$4.36 for cheese. How many pounds of each should you order if you plan to spend \$69.24?