Name _____

Please answer all questions and show all work.

Given $A = \begin{bmatrix} 2 & -4 \\ 1 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 4 & -1 \\ 2 & 0 \end{bmatrix}$ $C = \begin{bmatrix} 4 \\ 3 \end{bmatrix}$ $D = \begin{bmatrix} 3 & 1 \end{bmatrix}$ $E = \begin{bmatrix} -3 & 2 & 0 \\ 1 & -1 & -2 \end{bmatrix}$

Calculate. If not possible, put undefined:

1) A + B 2) 3B 3) AC 4) $\begin{vmatrix} 2 & -4 \\ 1 & 3 \end{vmatrix}$

5) AE 6) AD 7) B + D 8) B – 2A

Perform the following row operations beginning with matrix A and using your answer to each problem as the matrix for the next.

9) $-2R_2 + R_1 \rightarrow R_1$ 10) $R_1 \leftrightarrow R_2$ 11) $-\frac{1}{10}R_2$

_____ 12) Given the matrix $\begin{bmatrix} 1 & 6 & 5 \\ 2 & 3 & 1 \\ 0 & 2 & 4 \end{bmatrix}$ calculate the determinant.

Show your work.

_____13) Given that the augmented matrix $\left[\begin{array}{ccc|c} 1 & 3 & -1 & 8 \\ 0 & 3 & 1 & 11 \\ 0 & 0 & 4 & 8 \end{array}\right]$ represents a system of equations, give the solution to the system of equations as an ordered triplet.

14. a. Solve the following system algebraically:
    b. Solve the following system, using matrices:

$x - 2y + 3z = 4$
$2x + y - 4z = 3$
$-3x + 4y - z = -2$

Solve the following using matrices:

15. $2x - 3y = -4$
$5x + 7y = 1$

16. $5x + 2y - z = -7$
$x - 2y + 2z = 0$
$3y + z = 17$

17. $-2x + 3y - z = -1$
$x - 2y + z = 3$

18. $-2x + 3y - z = 4$
$2x - 3y + z = 1$

19. $x + y - z = 0$
$3x - y + 3z = -2$
$x + 2y - 3z = -1$