College Algebra Name________________________________
Abedi

1. Find the det (E), $E = \begin{bmatrix} 1 & 2 & 0 \\ -1 & 0 & 3 \\ 2 & -4 & -2 \end{bmatrix}$ ____20____, find the product $\begin{bmatrix} 1 & 2 & 0 \\ -1 & 0 & 3 \\ 2 & -4 & -2 \end{bmatrix}\begin{bmatrix} 0 & -4 \\ -2 & 5 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} -4 & 6 \\ 9 & 13 \\ 2 & -34 \end{bmatrix}$

2. Find: $3\begin{bmatrix} -1 & 0 & 5 \\ 2 & 1 & -1 \end{bmatrix} - 2\begin{bmatrix} 4 & -3 & 0 \\ 3 & -5 & 6 \end{bmatrix} = \begin{bmatrix} -11 & 6 & 15 \\ 0 & 13 & -15 \end{bmatrix}$

3. The minor of a_{31}, of the matrix E is: ____6____. The cofactor of a_{11} of the matrix E is: ____12____.

4. Use Cramer's rule to solve $\begin{cases} x_1 - 2x_2 + 4x_3 = 5 \\ 3x_1 + x_2 = -4 \\ -x_1 + 3x_2 - x_3 = 1 \end{cases}$

$$x_1 = \frac{\begin{vmatrix} 5 & -2 & 4 \\ -4 & 1 & 0 \\ 1 & 3 & -1 \end{vmatrix}}{\begin{vmatrix} 1 & -2 & 4 \\ 3 & 1 & 0 \\ -1 & 3 & -1 \end{vmatrix}} = \frac{-49}{33}, \quad x_2 = \frac{\begin{vmatrix} 1 & 5 & 4 \\ -3 & -4 & 0 \\ -1 & 1 & -1 \end{vmatrix}}{\begin{vmatrix} 1 & -2 & 4 \\ 3 & 1 & 0 \\ -1 & 3 & -1 \end{vmatrix}} = \frac{15}{33} \quad x_3 = \frac{\begin{vmatrix} 1 & -2 & 5 \\ 3 & -1 & -4 \\ -1 & 3 & -1 \end{vmatrix}}{\begin{vmatrix} 1 & -2 & 4 \\ 3 & 1 & 0 \\ -1 & 3 & -1 \end{vmatrix}} = \frac{61}{33}$$

5. $\dfrac{5! - 2!}{3!}$ ____19.66____, $\dfrac{5!8!}{3!6!}$ ____1120____, $\dbinom{10}{8} = 10C8$ ____45____, $\dbinom{20}{19}$ ____20____,

6. Find the sixth term of $(a+b)^{11} = 462a^6b^5$

7. Find the coefficient of the fourth term in the expansion of $(x+y)^5$ $\dbinom{5}{3} = 10$

8. What is the sum of the numbers in the 5th row of Pascal's triangle? ____16____.

9. Suppose that the following represents one row in Pascal's triangle

$$1 \quad a \quad b \quad c \quad d \quad . \; . \; . \quad d \quad e \quad f \quad 1$$

find the third number and the fourth number from the left in the next row $a + b$ & $b + c$

10. Find the third term in the expansion of $(x - y)^{12}$ $\binom{12}{2} x^{10}(-y)^2 = 66x^{10}y^2$

11. Expand the binomial $(3x - 2y)^4$:

$$(3x)^4 + \binom{4}{1}(3x)^3(-2y) + \binom{4}{2}(3x)^2(-2y)^2 + \binom{4}{3}(3x)\;(-2y)^3 + (-2y)^4$$

$$= 81x^4 - 216x^3y + 216x^2y^2 - 96xy^3 + 16y^4$$

12. Find the eleventh term in the expansion of $(2x + 3y)^{13}$

$$\binom{13}{10}(2x)^3(3y)^{10} = 286 \cdot 8 \cdot 3^{10}x^3y^{10} = 135{,}104{,}112x^3y^{10}$$