

Precalculus Worksheet #5 Chapter 9 page 1 _____

Evaluate each of the following determinants. Show your work neatly organized.

1. $\begin{vmatrix} 3 & 5 \\ 2 & 4 \end{vmatrix} = \underline{\hspace{2cm}}$

2. $\begin{vmatrix} -2 & 3 \\ -3 & 2 \end{vmatrix} = \underline{\hspace{2cm}}$

3. $\begin{vmatrix} -5 & 4 & -2 \\ 0 & 6 & 2 \\ 0 & 0 & -3 \end{vmatrix} = \underline{\hspace{2cm}}$

4. $\begin{vmatrix} 4 & -5 & 1 \\ 3 & -2 & 2 \\ -3 & 1 & 3 \end{vmatrix} = \underline{\hspace{2cm}}$

5. $\begin{vmatrix} 4 & 1 & 1 & 2 \\ 3 & -2 & 0 & -1 \\ -1 & 0 & 3 & 0 \\ 2 & 0 & -1 & 3 \end{vmatrix} = \underline{\hspace{2cm}}$

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Use Cramer's rule to solve each of the following systems. Show your work neatly organized.

6.
$$\begin{aligned} 3x + 2y &= 0 \\ x - 3y &= -11 \end{aligned}$$

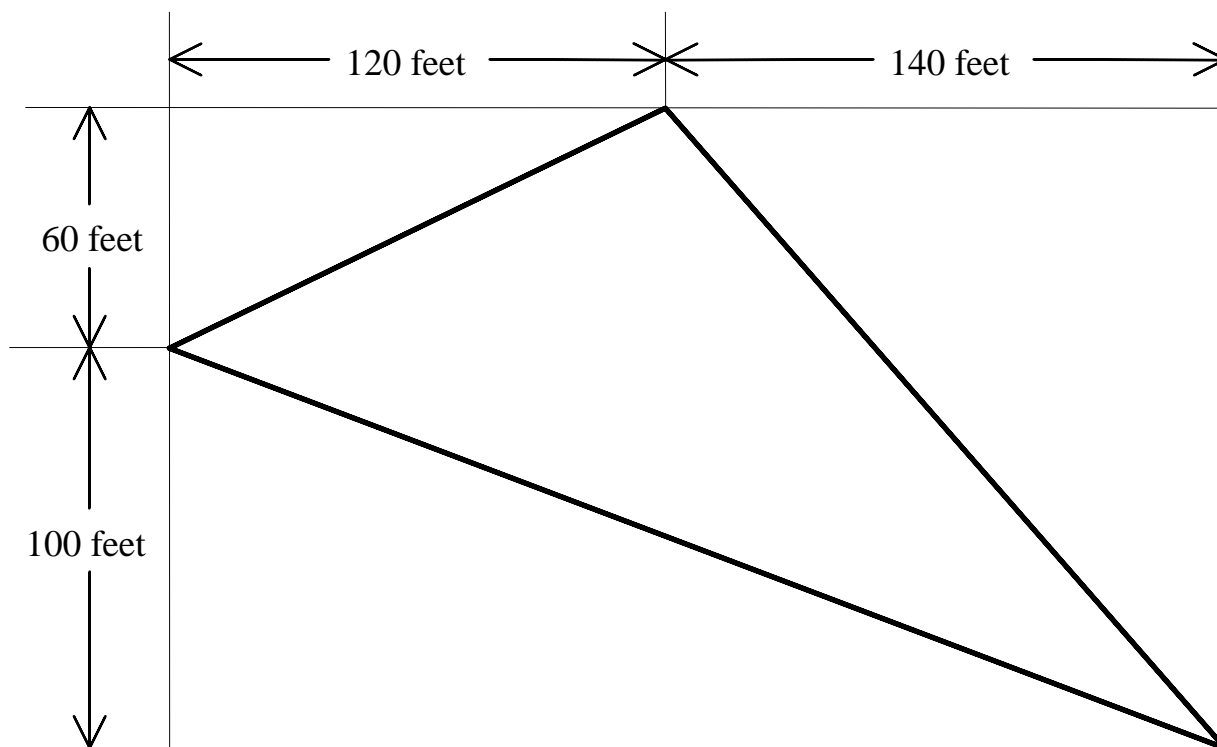
7.
$$\begin{aligned} 3x + y &= 2 \\ 5x + 3y &= 3 \end{aligned}$$

8.
$$\begin{aligned} x + 3y - z &= -4 \\ 2x - 2y + z &= 9 \\ -2x + y - 3z &= -14 \end{aligned}$$

9.
$$\begin{aligned} 3x + 5y &= 2 \\ 2x - 3z &= -5 \\ 4y + z &= 3 \end{aligned}$$

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10. Consider the triangular region shown below. Use a determinant to find its area. Show your work neatly organized.



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11. For this problem, you must decode a message. The matrix, A , that was used to encode the message is given below. The matrix C represents the coded message. What you must do is find A^{-1} and then multiply it by C . The order is important. If M is the matrix representing the message, then $M = (A^{-1})(C)$.

$$A = \begin{bmatrix} -2 & 0 & 2 & 1 \\ 2 & -1 & 0 & 4 \\ 1 & -1 & -1 & 2 \\ 0 & -1 & -1 & 1 \end{bmatrix} \quad C = \begin{bmatrix} 13 & -33 & -6 & 11 \\ 85 & 60 & 82 & 45 \\ 21 & 21 & 38 & 3 \\ -11 & -9 & 11 & -17 \end{bmatrix}$$