Unit 4.5 Determinants & Cramers Rule.

↳ if = 0, then no inverse

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Ex: #1a) $\begin{vmatrix} 5 & 4 \\ 8 & 9 \end{vmatrix} = 5(9) - 8(4)$

$45 - 32$

77

second-order Determinants

2x2

b) $\begin{vmatrix} 0 & 6 \\ 4 & 11 \end{vmatrix} = 0(11) - 4(6)$

$0 - 24$

-24

Ex: #2 $\begin{vmatrix} 4 & -8 & 3 \\ -3 & 2 & 6 \\ -4 & 5 & 9 \end{vmatrix}$

2nd Matrix → → Edit

3 x 3

2nd Quit

2nd matrix → math → det(enter

2nd matrix enter

det([A]) Enter

-98

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2A. $\begin{vmatrix} -5 & 9 & 4 \\ -2 & -1 & 5 \\ -4 & 6 & 2 \end{vmatrix}$

2nd Quit 2nd matrix → Math enter

det([A]) enter

-48

Ex #4: $5x - 6y = 16$

$3x + 4y = -29$

$A = \begin{bmatrix} 5 & 6 \\ 3 & 4 \end{bmatrix}$ $B = \begin{bmatrix} 16 \\ -29 \end{bmatrix}$

2nd Quit 2nd Matrix Enter

$[A]^{-1} \times [B]$ enter

$\begin{bmatrix} -2 \\ -5 \end{bmatrix}$

(-2, -5)

Ex #5: $4x + 5y - 6z = -14$

$3x - 2y + 7z = 47$

$7x - 6y - 8z = 15$

$A = \begin{bmatrix} 4 & 5 & -6 \\ 3 & -2 & 7 \\ 7 & -6 & -8 \end{bmatrix}$ $B = \begin{bmatrix} -14 \\ 47 \\ 15 \end{bmatrix}$

2nd Quit

2nd Matrix Enter

$[A]^{-1} * [B]$ enter

$\begin{bmatrix} 5 \\ -2 \\ 4 \end{bmatrix}$

(5, -2, 4)

x, y, z

Unit 4,5 Determinants & Cramers Rule.

↳ if = 0, then No inverse

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Ex: #1a) $\begin{vmatrix} 5 & -4 \\ 8 & 9 \end{vmatrix} = 5(9) - 8(-4)$

$45 - -32$

77

second-order Determinants 2x2

b) $\begin{vmatrix} 0 & 6 \\ 4 & -11 \end{vmatrix} = 0(-11) - 4(6)$

$0 - 24$

-24

Ex: #2 $\begin{vmatrix} 4 & -8 & 3 \\ -3 & 2 & 6 \\ -4 & 5 & 9 \end{vmatrix}$

2nd Matrix → → Edit

3 × 3

2nd Quit

2nd matrix enter

→ math

1: det(enter

2nd matrix enter

det ([A]) enter

-93

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2A. $\begin{vmatrix} -5 & 9 & 4 \\ -2 & -1 & 5 \\ -4 & 6 & 2 \end{vmatrix}$

2nd Quit 2nd matrix → Math enter

det ([A]) enter

-48

Ex #4: $5x - 6y = 15$

$3x + 4y = -29$

$A = \begin{bmatrix} 5 & 6 \\ 3 & 4 \end{bmatrix}$ $B = \begin{bmatrix} 15 \\ -29 \end{bmatrix}$

2nd Quit 2nd Matrix Enter

$[A]^{-1} \times [B]$ enter

$\begin{bmatrix} -3 \\ -5 \end{bmatrix}$

(-3, -5)

Ex #5: $4x + 5y - 6z = -14$

$3x - 2y + 7z = 47$

$7x - 6y - 8z = 15$

$A = \begin{bmatrix} 4 & 5 & -6 \\ 3 & -2 & 7 \\ 7 & -6 & -8 \end{bmatrix}$ $B = \begin{bmatrix} -14 \\ 47 \\ 15 \end{bmatrix}$

2nd Quit

2nd matrix Enter

$[A]^{-1} * [B]$ enter

$\begin{bmatrix} 5 \\ -2 \\ 4 \end{bmatrix}$

(5, -2, 4)

x, y, z