Today's Plan:

Learning Target (standard): I will review for the semester exam.

Students will: Complete practice problems over previous concepts at the boards and study for my exam.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuarcy and provide students feedback, describe and provide examples of exam problems.

Assessment: Board work

Differentiation: Students will work at the board, actively engage in practice review concepts with the aid of other students and the teacher.

Find the inverse and verify it.

$$\begin{bmatrix} 8 & 3 \\ -3 & 5 \end{bmatrix}$$

$D = 40+9$

$D = 49$

$$\left[\begin{array}{cc|cc} 8 & 3 & 1 & 0 \\ -3 & 5 & 0 & 1 \end{array}\right] \to \left[\begin{array}{cc|cc} 1 & \frac{3}{8} & \frac{1}{8} & 0 \\ -3 & 5 & 0 & 1 \end{array}\right] \to \left[\begin{array}{cc|cc} 1 & \frac{3}{8} & \frac{1}{8} & 0 \\ 0 & \frac{49}{8} & \frac{3}{8} & 1 \end{array}\right]$$

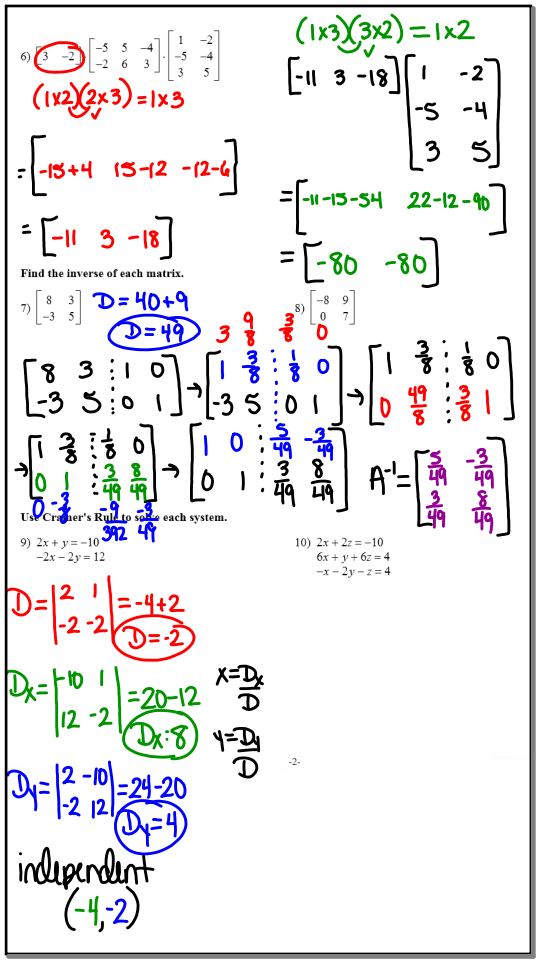
$$\to \left[\begin{array}{cc|cc} 1 & \frac{3}{8} & \frac{1}{8} & 0 \\ 0 & 1 & \frac{3}{49} & \frac{8}{49} \end{array}\right] \to \left[\begin{array}{cc|cc} 1 & 0 & \frac{5}{49} & \frac{-3}{49} \\ 0 & 1 & \frac{3}{49} & \frac{8}{49} \end{array}\right] \quad A^{-1} = \begin{bmatrix} \frac{5}{49} & \frac{-3}{49} \\ \frac{3}{49} & \frac{8}{49} \end{bmatrix}$$

$0 \quad -\frac{3}{8} \quad \frac{-9}{392} \quad \frac{-3}{49}$

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \quad A^{-1} = \frac{1}{D}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

$$\begin{bmatrix} 8 & 3 \\ -3 & 5 \end{bmatrix} \quad D = 49 \quad A^{-1} = \frac{1}{49}\begin{bmatrix} 5 & -3 \\ 3 & 8 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} \frac{5}{49} & \frac{-3}{49} \\ \frac{3}{49} & \frac{8}{49} \end{bmatrix} \checkmark$$



Cramer's Rule.

$$2x + 2z = -10$$
$$6x + y + 6z = 4$$
$$-x - 2y - z = 4$$

$D = 0$

$D_x = -134$

$x = \frac{D_x}{D} = \frac{-134}{0} = \text{und}$

inconsistent
no solution

Solve each system using the matrix method.

11) $-10x + 2y = 20$
$-9x - y = -10$

$\begin{bmatrix} -10 & 2 & 20 \\ -9 & -1 & -10 \end{bmatrix} \to \begin{bmatrix} 1 & -\frac{1}{5} & -2 \\ -9 & -1 & -10 \end{bmatrix} \to \begin{bmatrix} 1 & -\frac{1}{5} & -2 \\ 0 & -\frac{14}{5} & -28 \end{bmatrix}$

$\to \begin{bmatrix} 1 & -\frac{1}{5} & -2 \\ 0 & 1 & 10 \end{bmatrix}$

$x - \frac{1}{5}y = -2$

$y = 10$

$x - \frac{1}{5}(10) = -2$

$x - 2 = -2$

$x = 0$

independent

$(0, 10)$

12) $-4r - s - 6t = 17$
$-4r + s = 25$
$2r - 4s + t = -15$

Identify the domain of each. Is the function even, odd, or neither? Support your choice.

13) $f(x) = \frac{x-1}{3x^2 - 9x}$

14) $f(x) = \frac{x^2 - 9}{-4x + 16}$

Matrix Method.

$-4r - s - 6t = 17$
$-4r + s = 25$
$2r - 4s + t = -15$

$\begin{bmatrix} -4 & 1 & 0 & 25 \\ -4 & -1 & -6 & 17 \\ 2 & -4 & 1 & -15 \end{bmatrix} \to \begin{bmatrix} 1 & -\frac{1}{4} & 0 & -\frac{25}{4} \\ -4 & -1 & -6 & 17 \\ 2 & -4 & 1 & -15 \end{bmatrix}$

$\to \begin{bmatrix} 1 & -\frac{1}{4} & 0 & -\frac{25}{4} \\ 0 & -2 & -6 & -8 \\ 2 & -4 & 1 & -15 \end{bmatrix} \to \begin{bmatrix} 1 & -\frac{1}{4} & 0 & -\frac{25}{4} \\ 0 & -2 & -6 & -8 \\ 0 & -\frac{7}{2} & 1 & -\frac{5}{2} \end{bmatrix}$

$\to \begin{bmatrix} 1 & -\frac{1}{4} & 0 & -\frac{25}{4} \\ 0 & 1 & 3 & 4 \\ 0 & -\frac{7}{2} & 1 & -\frac{5}{2} \end{bmatrix} \to \begin{bmatrix} 1 & -\frac{1}{4} & 0 & -\frac{25}{4} \\ 0 & 1 & 3 & 4 \\ 0 & 0 & \frac{23}{2} & \frac{23}{2} \end{bmatrix}$

$\to \begin{bmatrix} 1 & -\frac{1}{4} & 0 & -\frac{25}{4} \\ 0 & 1 & 3 & 4 \\ 0 & 0 & 1 & 1 \end{bmatrix}$

$x - \frac{1}{4}y = -\frac{25}{4}$

$y + 3z = 4$

$z = 1$

$y + 3 = 4$

$y = 1$

$x - \frac{1}{4} = -\frac{25}{4}$

$x = -6$

independent

$(-6, 1, 1)$