

## Today's Plan:

**Learning Target (standard):** I will solve 3x3 linear systems using the elimination method.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

p.481 #48-54 even

48) *independent*  $(-2, -1, 3)$

50) *inconsistent* - no solution

52) *independent*  $(1, 4, 1)$

54) *independent*  $(1, 3, 2)$

Solve using elimination:

$$(4x - 2y + 6z = 1) \cdot 2$$

$$3x + 4y + 2z = 1$$

$$(2x - y + 3z = 2) \cdot 4$$

$$8x - 4y + 12z = 2$$

$$3x + 4y + 2z = 1 \quad > +$$

$$8x - 4y + 12z = 8 \quad > +$$

$$11x + 14z = 3$$

$$-1 \cdot (11x + 14z = 9)$$

$$11x + 14z = 3$$

$$-11x - 14z = -9$$

$$\hline 0 \neq -6$$

inconsistent  
no solution

Solve using the elimination method.

$$2(x - 3y + 2z = 1)$$

$$-2(x - 2y + 3z = 5)$$

$$2x - 6y + 4z = 3$$

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

$$-2x + 4y - 6z = -10 \quad > +$$

$$2x - 6y + 4z = 3 \quad > +$$

$$(-2y - 2z = -8)^{-1}$$

$$-2y - 2z = -7$$

$$2y + 2z = 8$$

$$-2y - 2z = -7$$

$$\hline 0 \neq 1$$

inconsistent  
no solution

Solve using the elimination method.

$$\begin{array}{r}
 3x - y - 2z = 11 \\
 -1(2x + y - 2z = 11) \\
 2(x + 3y - z = 8)
 \end{array}
 \begin{array}{r}
 3x - y - 2z = 11 \\
 -2x - y + 2z = -11 \\
 2x + 6y - 2z = 16
 \end{array}
 \begin{array}{l}
 > + \\
 > +
 \end{array}$$

$$\begin{array}{l}
 x - 2y = 0 \\
 5y = 5 \\
 y = 1
 \end{array}$$

independent  
 $(2, 1, -3)$

$$\begin{array}{l}
 x - 2 = 0 \\
 x = 2
 \end{array}$$

$$\begin{array}{l}
 2 + 3 - z = 8 \\
 5 - z = 8 \\
 -z = 3 \\
 z = -3
 \end{array}$$

Solve each system using the elimination method:

$$\begin{array}{r}
 (5a - 4b - 6c = -1)3 \\
 (-4a + 6b - 5c = 26)2 \\
 (-a + b + 5c = -7)-12
 \end{array}
 \begin{array}{r}
 15a - 12b - 18c = -3 \\
 -8a + 12b - 10c = 52 \\
 12a - 12b - 60c = 84
 \end{array}
 \begin{array}{l}
 > + \\
 > +
 \end{array}$$

$$\begin{array}{r}
 4(7a - 28c = 49) \\
 -1(4a - 70c = 136)
 \end{array}
 \begin{array}{r}
 28a - 112c = 196 \\
 -28a + 490c = -952
 \end{array}$$

$$4a + 140 = 136$$

$$4a = -4$$

$$a = -1$$

independent  
 $(-1, 2, -2)$

$$1 + b - 10 = -7$$

$$b - 9 = -7$$

$$b = 2$$

$$378c = -756$$

$$c = -2$$

Solve using the elimination method.

$$\begin{array}{r}
 4x + 6y + 6z = -4 \\
 (-x - 3y + 2z = -21) \cdot 2 \\
 (-3x - y - 5z = 16) \cdot -6
 \end{array}
 \begin{array}{r}
 4x + 6y + 6z = -4 \\
 -2x - 6y + 4z = -42 > + \\
 18x + 6y + 30z = -96 > +
 \end{array}$$

$$\begin{array}{r}
 (2x + 10z = -46) \cdot -8 \\
 16x + 34z = -138
 \end{array}
 \begin{array}{r}
 -16x - 80z = 368 \\
 16x + 34z = -138 \\
 \hline
 -46z = 230 \\
 z = -5
 \end{array}$$

$$\begin{array}{r}
 2x - 50 = -46 \\
 2x = 4 \\
 x = 2
 \end{array}
 \begin{array}{r}
 -6 - y + 25 = 16 \\
 -y + 19 = 16 \\
 -y = -3 \\
 y = 3
 \end{array}$$

independent  
(2, 3, -5)

Solve using the elimination method.

$$\begin{array}{r}
 (4x + 6y + 6z = 0) \cdot 3 \\
 (3x + 4y - 2z = -20) \cdot -4 \\
 (-6x + 6y - 5z = 27) \cdot -2
 \end{array}
 \begin{array}{r}
 12x + 18y + 18z = 0 \\
 -12x - 16y + 8z = 80 > + \\
 12x - 12y + 10z = -54 > +
 \end{array}$$

$$\begin{array}{r}
 (2y + 26z = 80) \cdot 14 \\
 -28y + 18z = 26
 \end{array}
 \begin{array}{r}
 28y + 364z = 1120 \\
 -28y + 18z = 26 \\
 \hline
 382z = 1146 \\
 z = 3
 \end{array}$$

$$\begin{array}{r}
 -28y + 54 = 26 \\
 -28y = -28 \\
 y = 1
 \end{array}
 \begin{array}{r}
 -6x + 6 - 15 = 27 \\
 -6x - 9 = 27 \\
 -6x = 36 \\
 x = -6
 \end{array}$$

independent  
(-6, 1, 3)

Assignment:

Elimination Method 3x3

#1-4