

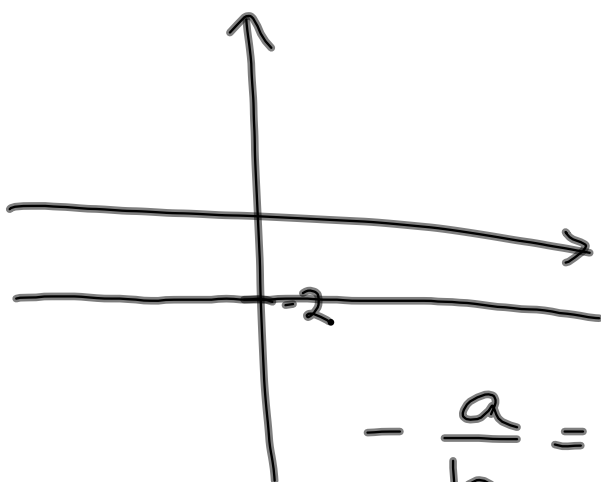
**Test #2 NEXT WEDNESDAY (9/19)**

emphasis on chapters 3 & 4, but will include some review problems! similar to old test #2, but will also include systems of linear equations (4.1,4.2)

**Rather than taking the test in the 40-minute class period,** we will take the test during the AHSGE morning break at **8:00 am**. We will meet for class during the regularly scheduled time that day.

3.3

18.  $y = -2$

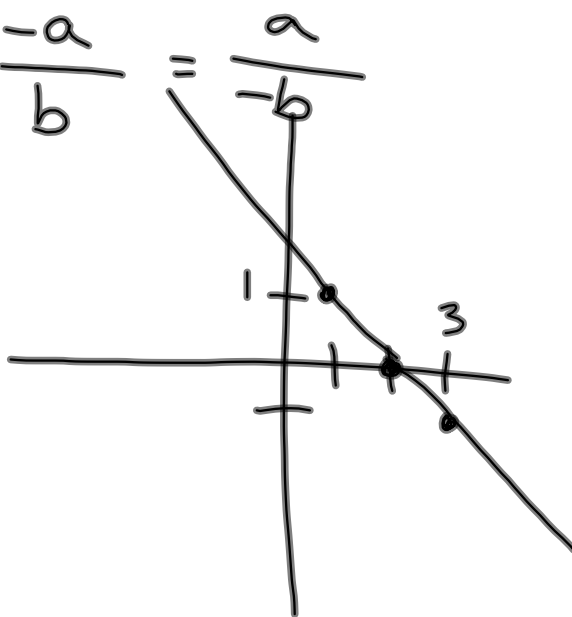


$$-\frac{a}{b} = \frac{-a}{b} = \frac{a}{-b}$$

3.4

41.  $(2, 0)$ , slope  $-1$

$$\frac{-1 \text{ down}}{1 \text{ right}} = \frac{1 \text{ up}}{-1 \text{ left}}$$



3 5  
26. (0, 4) slope undefined

$$x = 0$$

27.  $P_1(0, 2)$ ,  $P_2(3, 5)$

$$m = \frac{2-5}{0-3} = \frac{-3}{-3} = 1$$

$$y - y_1 = m(x - x_1)$$

$$y - 2 = 1(x - 0)$$

$$y = x + 2$$

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$$y = 5x + 2$$

A line has slope

$\frac{5}{1}$  up 5  
right 1

$\frac{-5}{-1}$  down 5  
left 1

$-\frac{1}{5}$  +  
/ -

$$\frac{3.6}{15.}$$

(Addition Method)

4.2 Solving Systems of Equations by the Elimination MethodRules: We can...

1. multiply an equation by a non-zero constant
2. interchange any 2 equations
3. add a non-zero multiple of any equation to another

$$16. \begin{cases} 3x + 4y = 25 & (1) \\ 2x + y = 10 & (2) \end{cases}$$

multiply eq. (2) by -4

$$\Rightarrow \begin{cases} 3x + 4y = 25 \\ -8x - 4y = -40 \end{cases}$$

$$+ \quad \hline -5x = -15$$

$$x = 3$$

$$2(3) + y = 10$$

$$y = 10 - 6$$

$$y = 4$$

$$\boxed{(3, 4)}$$

$$14. \begin{cases} 3x + 6y = 7 & (1) \\ 2x + 4y = 5 & (2) \end{cases}$$

mult eq (1) by 2; (2) by -3

$$\Rightarrow \begin{cases} 6x + 12y = 14 \\ + \quad (-6x - 12y = -15) \end{cases}$$

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$$\cdot \quad 0 = -1$$

$\Rightarrow$  inconsistent system of equation

no solution

$$26. \begin{cases} 3x + 3y = y + 1 \\ x + 3y = 9 - x \end{cases}$$

$$= \begin{cases} 3x + 2y = 1 & (1) \\ 2x + 3y = 9 & (2) \end{cases}$$

$$(-3, 5)$$

mult (1) by -2 ; (2) by 3

$$\Rightarrow \begin{cases} -6x - 4y = -2 \\ 6x + 9y = 27 \end{cases}$$


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$$5y = 25$$

$$y = 5$$

$$3x + 2(5) = 1$$

$$3x = 1 - 10$$

$$3x = -9$$

$$x = -3$$

Solve using a matrix!

$$26. \begin{cases} 3x + 2y = 1 \\ 2x + 3y = 9 \end{cases} \quad \left[ \begin{array}{cc|c} 3 & 2 & 1 \\ 2 & 3 & 9 \end{array} \right]$$

Goal is to rewrite as:

$$\left[ \begin{array}{cc|c} 1 & 0 & a \\ 0 & 1 & b \end{array} \right] \quad \text{solution is } (a, b)$$

$$\left[ \begin{array}{cc|c} 3 & 2 & 1 \\ 2 & 3 & 9 \end{array} \right] \xrightarrow{(1)-(2)} \left[ \begin{array}{cc|c} 1 & -1 & -8 \\ 2 & 3 & 9 \end{array} \right]$$

$$\xrightarrow{(2)-2(1)} \left[ \begin{array}{cc|c} 1 & -1 & -8 \\ 0 & 5 & 25 \end{array} \right] \xrightarrow{(2) \cdot \frac{1}{5}} \left[ \begin{array}{cc|c} 1 & -1 & -8 \\ 0 & 1 & 5 \end{array} \right]$$

$$\xrightarrow{(1)+(2)} \left[ \begin{array}{cc|c} 1 & 0 & -3 \\ 0 & 1 & 5 \end{array} \right] \quad \boxed{(-3, 5)}$$



$$56. \begin{cases} 2x - y + z = 6 \\ 3x + 2y + z = 4 \\ x - 2y + 3z = 12 \end{cases}$$

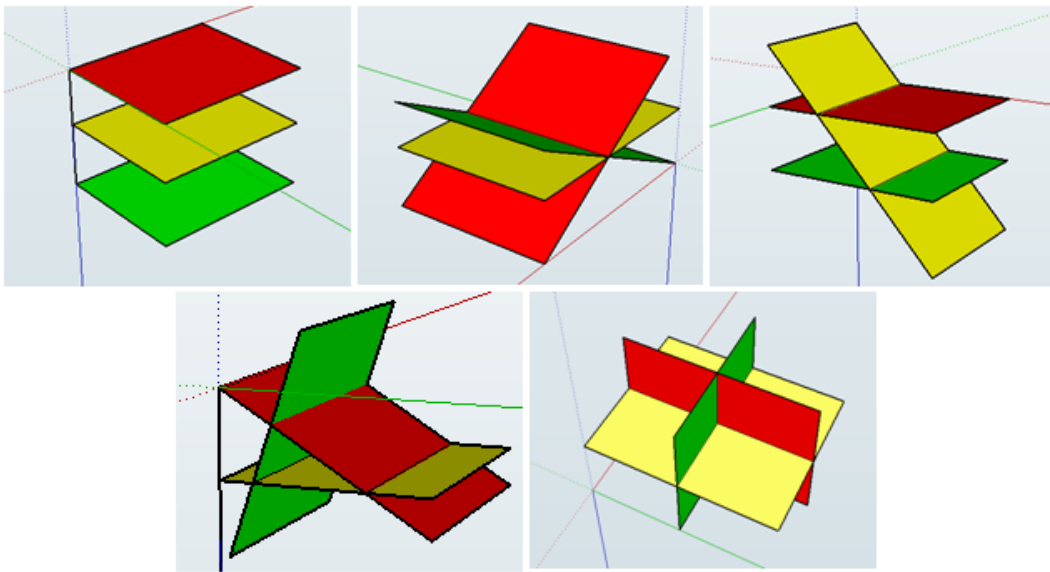
$$\left[ \begin{array}{ccc|c} 2 & -1 & 1 & 6 \\ 3 & 2 & 1 & 4 \\ 1 & -2 & 3 & 12 \end{array} \right]$$

$$\text{Goal: } \left[ \begin{array}{ccc|c} 1 & 0 & 0 & a \\ 0 & 1 & 0 & b \\ 0 & 0 & 1 & c \end{array} \right]$$

solution  
(a, b, c)

$$\text{interchange} \\ (1) \ \& \ (3) \rightarrow \left[ \begin{array}{ccc|c} 1 & -2 & 3 & 12 \\ 3 & 2 & 1 & 4 \\ 2 & -1 & 1 & 6 \end{array} \right]$$

$$\begin{array}{l} (2) - 3(1) \\ (3) - 2(1) \end{array} \rightarrow \left[ \begin{array}{ccc|c} 1 & -2 & 3 & 12 \\ 0 & 8 & -8 & -32 \\ 0 & 3 & -5 & -18 \end{array} \right] \xrightarrow{(2) \cdot \frac{1}{8}} \dots$$



Homework:

Read handout on how to solve a linear system of equations using a matrix here: <http://www.asms.net/brewer/precal-matrixoperations.pdf> ("Matrices" link under "Precalculus" on my web site asms.net/brewer)

Watch "Matrices: Reduced Row Echelon Form 2" on Khan Academy: <http://www.khanacademy.org/math/algebra/algebra-matrices/v/matrices--reduced-row-echelon-form-2>

Practice "Systems of equations with elimination" on Khan Academy: [http://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/e/systems\\_of\\_equations\\_with\\_elimination](http://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/e/systems_of_equations_with_elimination)

Work textbook problems 4.2#49-63 odd using matrices.

