

$C = \text{Complex } a+bi, 7+4i, 2+0i, 0-7i$
↑ ↑
real mag

0.00170 ft. 3

$$\frac{160 \cancel{\text{in}}}{\cancel{\text{sec}}} \times \frac{1 \text{ ft}}{12 \cancel{\text{in}}} \times \frac{60 \cancel{\text{sec}}}{1 \text{ min}} = 800 \frac{\text{ft}}{\text{min}}$$

$(-3, 30)$

$$14(x-4) = 9x - 42$$

$$\begin{aligned}
 & 4 \begin{bmatrix} -1 \\ 2 \end{bmatrix} - 3 \begin{bmatrix} -7 \\ 4 \end{bmatrix} \\
 &= \begin{bmatrix} -4 \\ 8 \end{bmatrix} + \begin{bmatrix} 21 \\ -12 \end{bmatrix} \\
 &= \begin{bmatrix} 17 \\ -4 \end{bmatrix}
 \end{aligned}$$

$$\begin{aligned}
 & \begin{bmatrix} -2 & 4 & 3 & 1 \\ 3 & 5 & 6 & 2 \end{bmatrix} \cdot \begin{bmatrix} 9 & 4 \\ 2 & 0 \\ -8 & -1 \\ 1 & 5 \end{bmatrix} \\
 & \quad 2 \times 4 \quad 4 \times 2 \\
 &= \begin{bmatrix} -18+8+-24+1 & -8+0+3+5 \\ 27+10+-48+2 & 12+0+-6+10 \end{bmatrix} \\
 &= \begin{bmatrix} -33 & -6 \\ -9 & 16 \end{bmatrix}
 \end{aligned}$$

Lines

Slope-Int

$$y = mx + b$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Perp.
opposite reciprocal slope

Point-Slope

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

Horiz

$$y = \# \quad m = 0$$

Standard

$$Ax + By = C$$

No fractions $m = -\frac{A}{B}$

Vertical

$$x = \# \quad m = \text{undef.}$$

Find eq. of the line $\perp$ to $3x - 8y = 11$
& passing through $(-1, 4)$.

$$m = \frac{+3}{+8} \quad \perp m = -\frac{8}{3}$$

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

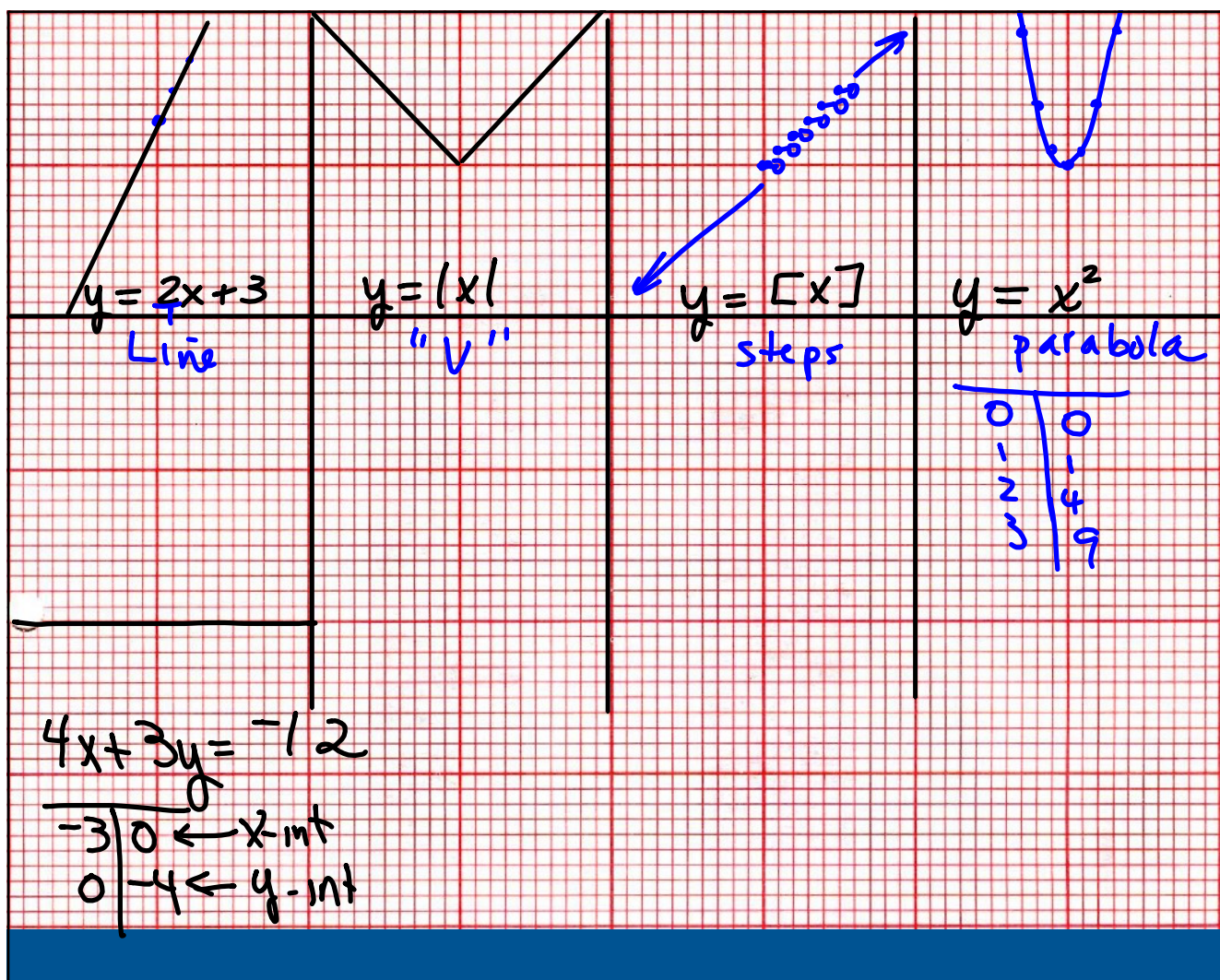
$$y - 4 = -\frac{8}{3}(x + 1)$$

$$y - 4 = -\frac{8}{3}x - \frac{8}{3}$$

$$\begin{array}{r} +4 \qquad +4 \\ y = -\frac{8}{3}x + \frac{4}{3} \end{array}$$

12 ^{yr, wage}
(1974, 2)

(199, 4.55)



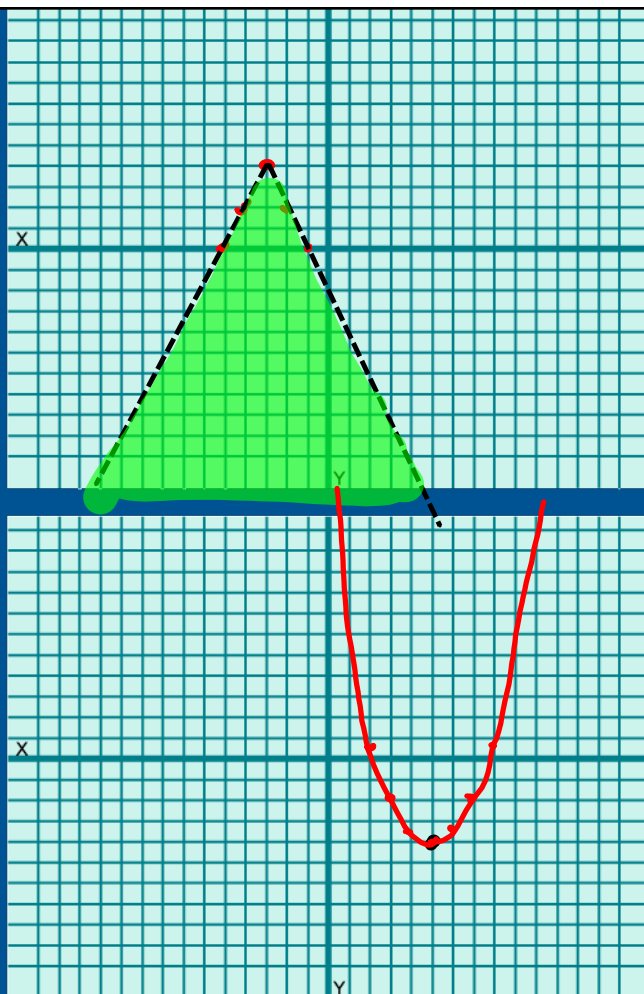
$$y < -2|x+3| + 4$$

↑
slope
↑
left
3
↑
up
4

$$y = \frac{1}{2}(x-5)^2 - 4$$

Right
5
Down
4

0	0
1	1 1/2
2	4 2
3	9 4.5



Systems of Equations

$$2x + 5y = 13$$

$$3x - 2y = -9$$

$$x = \frac{\begin{vmatrix} 13 & 5 \\ -9 & -2 \end{vmatrix}}{\begin{vmatrix} 2 & 5 \\ 3 & -2 \end{vmatrix}} = \frac{-26 + 45}{-4 - 15} = \frac{19}{-19} = -1$$

$$y = \frac{\begin{vmatrix} 2 & 13 \\ 3 & -9 \end{vmatrix}}{\begin{vmatrix} 2 & 5 \\ 3 & -2 \end{vmatrix}} = \frac{-18 - 39}{-19} = \frac{-57}{-19} = 3$$

$$\boxed{(-1, 3)}$$

Matrix Eq

$$2x + 5y = 13$$

$$3x - 2y = -9$$

$$[A]^{-1} \cdot \begin{bmatrix} 2 & 5 \\ 3 & -2 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 13 \\ -9 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 & 5 \\ 3 & -2 \end{bmatrix}^{-1} \cdot \begin{bmatrix} 13 \\ -9 \end{bmatrix}$$

- 1) substitution
- 2) elimination
- 3) Cramer's
- 4) Matrix eq.

5) Graphing

find intersection on calculator

$$\begin{array}{rcl} 2x + 4y - 3z & = & 14 \\ 1x - 2y + z & = & 12 \\ x + 3y - 5z & = & 3 \end{array}$$

Elimination

Matrix Eq.

$$2x + 4y - 3z = 14$$

$$1x - 2y + z = 12$$

$$x + 3y - 5z = 3$$

Complex Numbers

$$\sqrt{28} + \sqrt{63}$$

$$\frac{5}{3\sqrt{7}}$$

$$\frac{2 + \sqrt{7}}{4 - 2\sqrt{7}}$$

$$i =$$

$$i^2 =$$

$$i^3 =$$

$$i^4 =$$

$$2i^{75} - 4i^{1000}$$

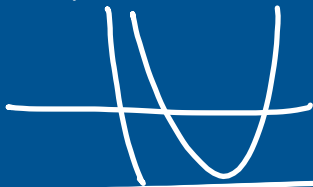
$$\sqrt{-18} \cdot \sqrt{-12}$$

$$\frac{5 + 2i}{3 - 4i}$$

Solving Quadratic Equations

- 1) Factoring
- 2) Quadratic formula
- 3) Completing the Square
- 4) Graphing on calculator

$$10x^2 - 11x = 6$$



$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$ax^2 + bx + c$$

Vertex:
 $x =$

$$y =$$

$$y = (x - p)(x - q)$$

$$h(t) = \frac{1}{2}at^2 + v_0t + S_0$$
$$a = -32 \text{ ft/s}^2 \quad a = -9.8 \text{ m/s}^2$$