Section LS-1: Methods of Solving Linear Systems

- Solve Linear Systems by Graphing
  - Graph each line
    - Write line in slope intercept form \( y = mx + b \)
    - Use the slope and \( y \) intercept to graph each line on the same graph
  - Where the lines cross (intersect) is the answer to the solution
  - Check your work
  - Solve \( x + 2y = 7 \) and \( 3x - 2y = 5 \)
    - \( x + 2y = 7 \)
      - \( y = (-1/2)x + (7/2) \)
      - Slope = \(-1/2\)
      - \( Y - \text{Int} = (0, 7/2) \)
    - \( 3x - 2y = 5 \)
      - \( y = (3/2)x + (-5/2) \)
      - Slope = \(3/2\)
      - \( Y - \text{Int} = (0, -5/2) \)

- Solve Linear Systems by Substitution
  - Solve: one of the equations for one of its variables. Preferably ones whose coefficient is 1 or -1
  - Substitute: the expression from step one into the other equation and solve for the remaining variable
  - Stick: The value from step 2 into the revised equation from step one and solve
  - Check: Plug your answer into both equations and check algebraically
  - Solve: \( 2x - y = 0 \) and \( x + 3y = -56 \)

- Solve Linear Systems by Elimination with Addition
  - Add or subtract the equations to eliminate one of the variables
  - Solve the resulting equation for the other variable
  - Substitute in either original equation to find the value of the eliminated variable
  - Check by substituting back into both equations
  - Solve: \( x + 2y = 2 \) and \( -x + 3y = 13 \)