SOLVE LINEAR SYSTEMS USING ELIMINATION METHOD

1. Solve each linear system.

a) $x + 6y = 15$
$x + 2y = 3$

Add or subtract the equations to eliminate one of the variables and then solve:	Solve for the other variable:	Solution:
$x + 6y = 15$ $-(x + 2y = 3)$ $\emptyset[6y - 2y] = [15 - 3]$ $\frac{4y}{4} = \frac{12}{4}$ $y = 3$	Sub $y = 3$ in $x + 2y = 3$ $x + 2(3) = 3$ $x + 6 = 3$ $x = 3 - 6$ $x = -3$	POI is $(-3, 3)$

b) $3x + y = 11$
$5x + y = 5$

Add or subtract the equations to eliminate one of the variables and then solve:	Solve for the other variable:	Solution:
$3x + y = 11$ $-(5x + y = 5)$ $[3x - 5x]\emptyset = [11 - 5]$ $\frac{-2x}{-2} = \frac{6}{-2}$ $x = -3$	Sub $x = -3$ in $3x + y = 11$ $3(-3) + y = 11$ $-9 + y = 11$ $y = 11 + 9$ $y = 20$	POI is $(-3, 20)$

c) $x + y = 1$
$3x - y = 15$

Add or subtract the equations to eliminate one of the variables and then solve:	Solve for the other variable:	Solution:
$x + y = 1$ $+(3x - y = 15)$ $[x + 3x]\emptyset = [1 + 15]$ $\frac{4x}{4} = \frac{16}{4}$ $x = 4$	Sub $x = 4$ in $x + y = 1$ $(4) + y = 1$ $y = 1 - 4$ $y = -3$	POI is $(4, -3)$

d) $x + 5y = -10$
$-x - 2y = 4$

Add or subtract the equations to eliminate one of the variables and then solve:	Solve for the other variable:	Solution:
$x + 5y = -10$ $+\ -x - 2y = 4$ $\cancel{x}[5y + (-2y)] = [-10 + 4]$ $\frac{3y}{3} = \frac{-6}{3}$ $y = -2$	Sub $y = -2$ in $x + 5y = -10$ $x + 5(-2) = -10$ $x - 10 = -10$ $x = -10 + 10$ $x = 0$	POI is $(0, -2)$

e) $3x + 5y = 14$
$3x + 2y = 11$

Add or subtract the equations to eliminate one of the variables and then solve:	Solve for the other variable:	Solution:
$3x + 5y = 14$ $-\ 3x + 2y = 11$ $\cancel{3x}[5y - 2y] = [14 - 11]$ $\frac{3y}{3} = \frac{3}{3}$ $y = 1$	Sub $y = 1$ in $3x + 2y = 11$ $3x + 2(1) = 11$ $3x + 2 = 11$ $3x = 11 - 2$ $\frac{3x}{3} = \frac{9}{3}$ $x = 3$	POI is $(3, 1)$

f) $7x - 4y = 26$
$3x + 4y = -6$

Add or subtract the equations to eliminate one of the variables and then solve:	Solve for the other variable:	Solution:
$7x - 4y = 26$ $+\ 3x + 4y = -6$ $[7x + 3x]\ \cancel{y} = [26 + (-6)]$ $\frac{10x}{10} = \frac{20}{10}$ $x = 2$	Sub $x = 2$ in $3(2) + 4y = -6$ $6 + 4y = -6$ $4y = -6 - 6$ $\frac{4y}{4} = \frac{-12}{4}$ $y = -3$	POI is $(2, -3)$