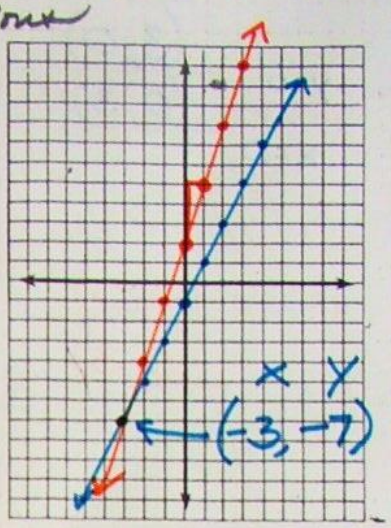
# [4-1] Graphing Method to Solve Systems of Equations

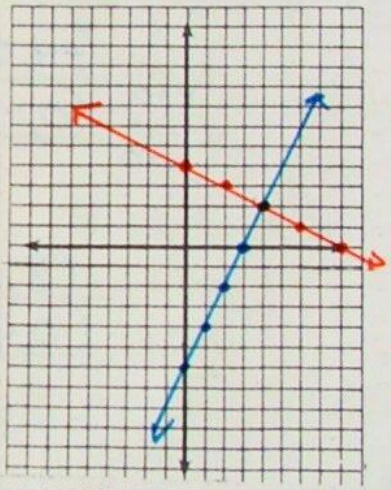
Graph both lines on the same grid.




① $y = 3x + 2$ $m = \frac{3}{1}$ $b = 2$

$y = 2x - 1$ $m = \frac{2}{1}$ $b = -1$

Solution $(-3, -7)$

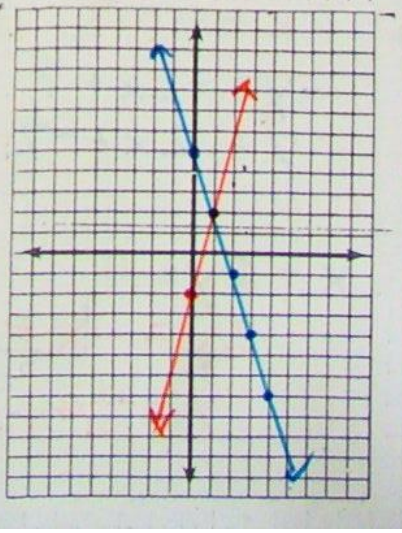


② $y = -\frac{1}{2}x + 4$ $m = \frac{-1}{2}$ $b = 4$

$y = 2x - 6$ $m = \frac{2}{1}$ $b = -6$

Solution $(4, 2)$

* Put equations in slope-intercept form.



③ $y - 5 = -3x$

$y = 5 + -3x$

$m = -3$ $b = 5$

$-4x + y = -2$

$y = 4x + -2$

Solution $(1, 2)$ $m = 4$ $b = -2$

④ $3x + 3y = 9$

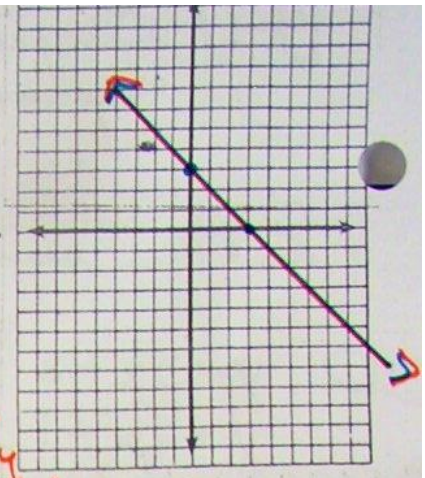
x-int: $y=0$ (3,0)

y-int: $x=0$ (0,3)

$x + y = 3$

x-int: (3,0)

y-int: (0,3) Solution Infinitely Many Solutions



⑤ $x + 2y = -4$

x-int: $y=0$ (-4,0)

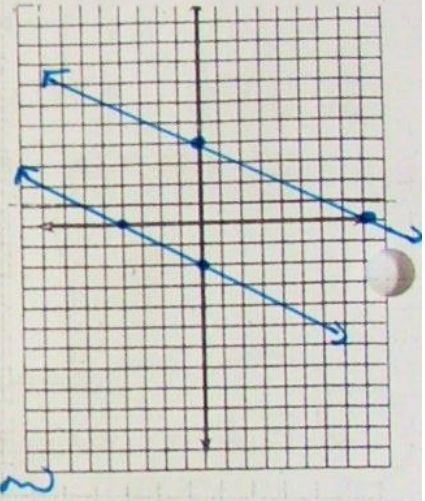
y-int: $x=0$ (0,-2)

$x + 2y = 8$

x-int: (8,0)

y-int: (0,4)

Solution: No Solution (NS)



⑥ $2x - y = 7$ (transform to $y = mx + b$)

$-y = -2x + 7$

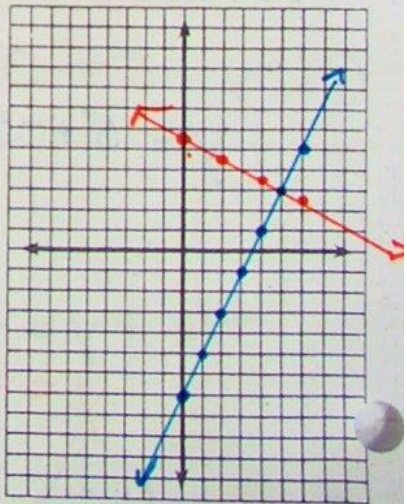
$y = 2x + -7$

(5,3)

$x + 2y = 11$

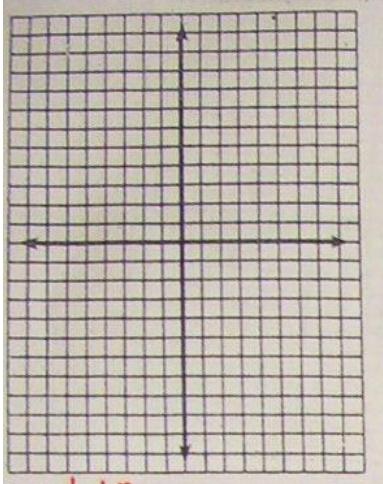
$\frac{2y}{2} = -\frac{x + 11}{2}$

$y = -\frac{1}{2}x + 5\frac{1}{2}$

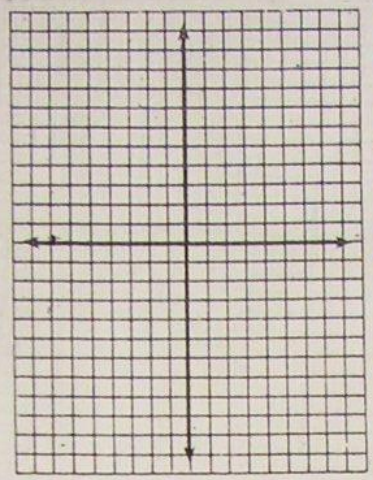


[4-1] Systems of Linear Equations:
Solving Systems by Graphing

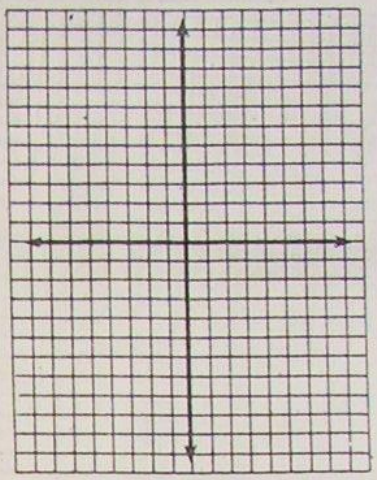
**Solve each system by the graphing method.**



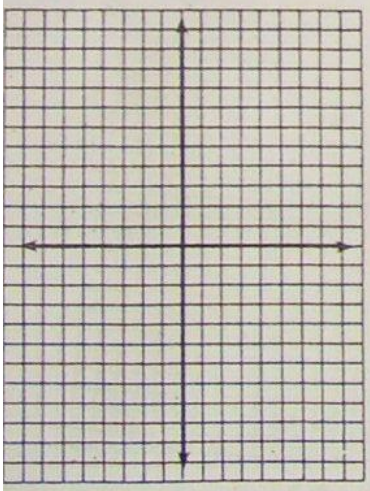
1. $y = x + 0$
   $y = 6 - x$



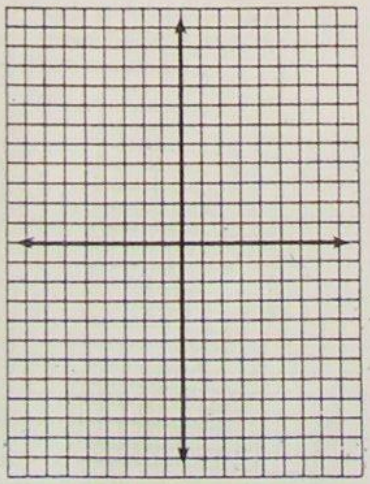
2. $y = -x$
   $y = x + 9$



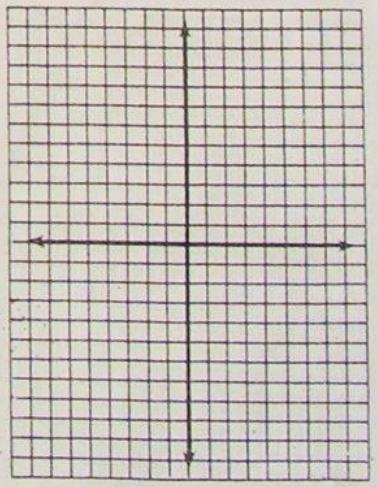
3. $y = -x + 2$
   $y = 2x + 5$



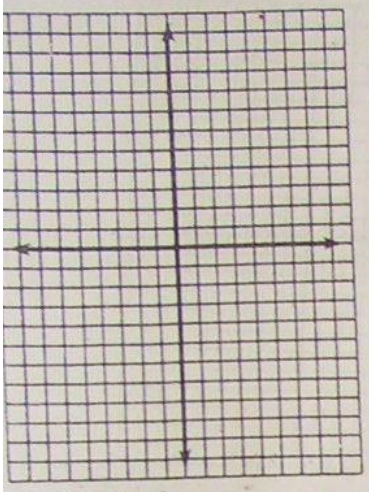
4. $y = 3x + 1$
   $y = 3x - 8$



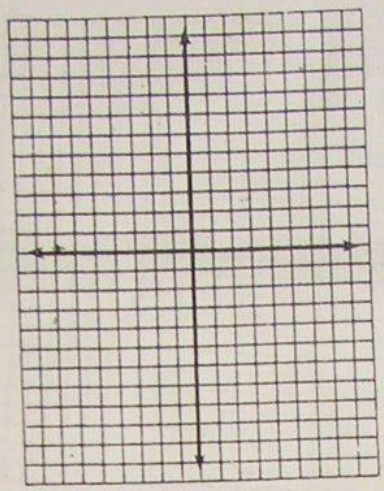
5. $x - y = 6$
   $2x + y = 0$



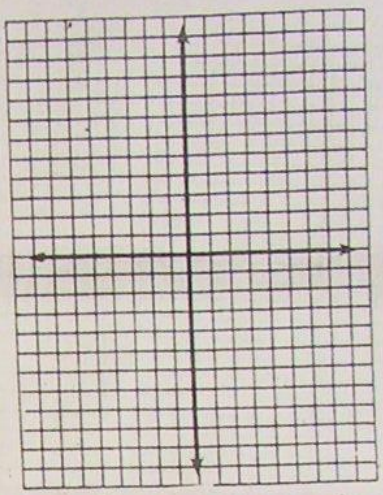
6. $4x + y = -3$
   $5x - y = -6$



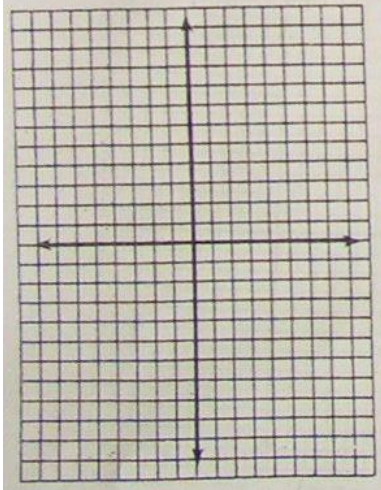
**7.** $3x - 9y = 0$
$-x + 3y = -3$



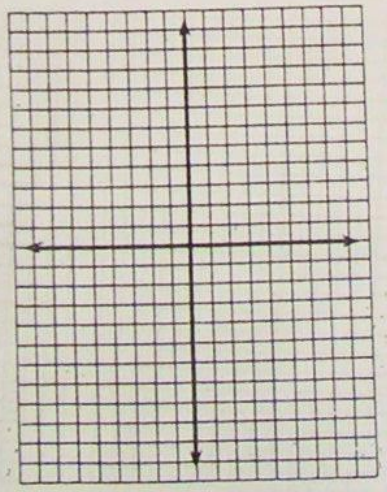
**8.** $-2x + y = -1$
$x + y = 5$



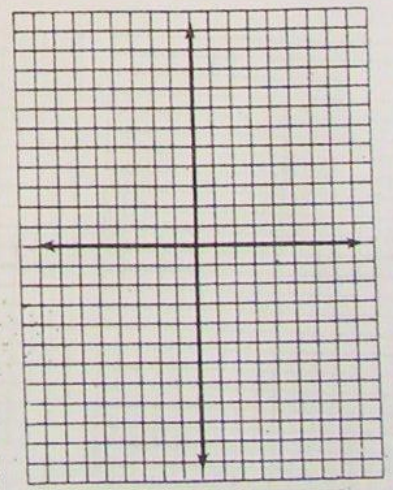
**9.** $y = \frac{1}{2}x + 1$
$4x - 8y = -8$



**10.** $2y - x = 2$
$x - 2y = 8$

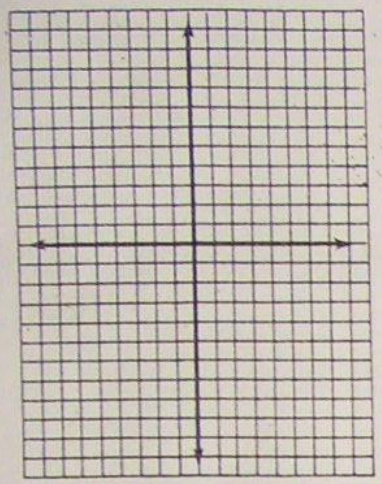


**11.** $y - 2x = -5$
$y - x = -3$

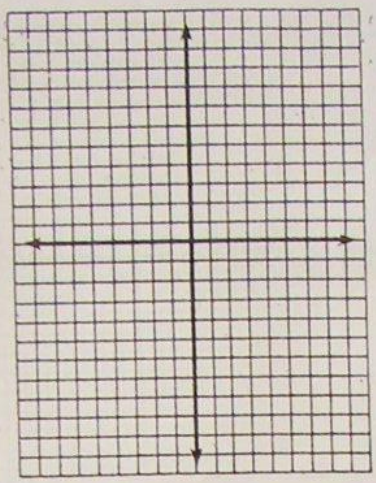


**12.** $6x + 4y = 2$
$3x + 2y = 1$

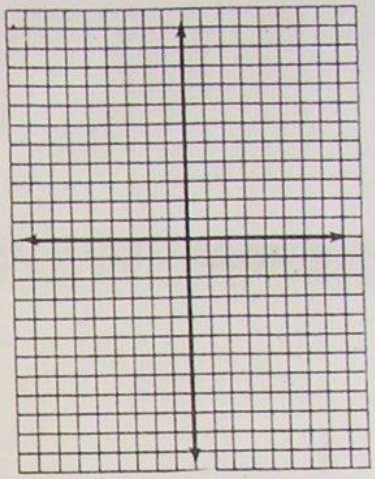
**Solve each system by the graphing method. Estimate the coordinates of the intersection point to the nearest half unit.**



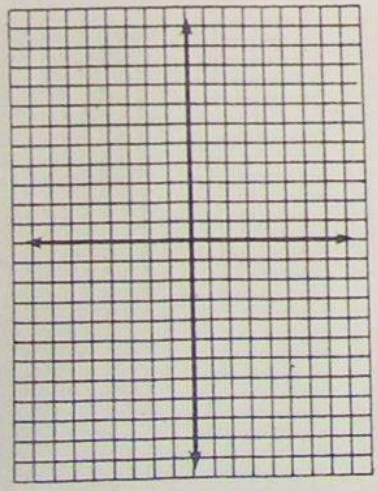
**13.** $x + y = 3$
$x - y = 4$



**14.** $x + y = -2$
$2x - y = 10$



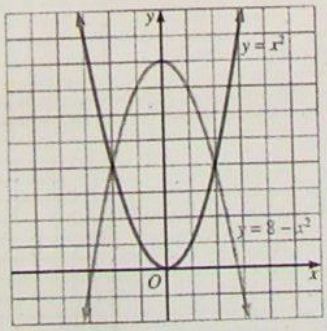
**15.** $3x + 5y = 15$
$x - y = 4$



**16.** $2y - 3x = 9$
$4y + 3x = 12$

**The graphing method of solving a system of equations is particularly useful when the equations are not linear. Estimate the solutions of each nonlinear system below by studying the graphs. Check whether your estimate satisfies both equations.**

**17.** $y = x^2$ and $y = 8 - x^2$




**18.** $y = x^2 - 2x$ and $y = -x^2 + 6x - 6$