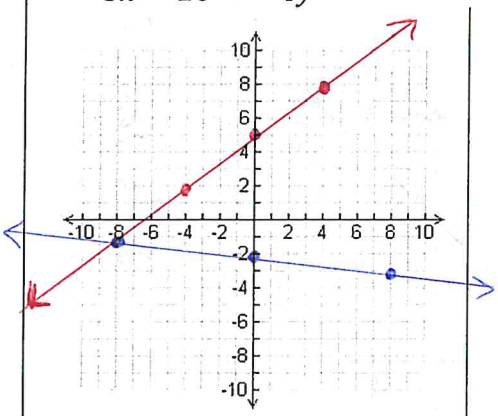
Solving Systems of Equations by Graphing

Unit 4: Systems

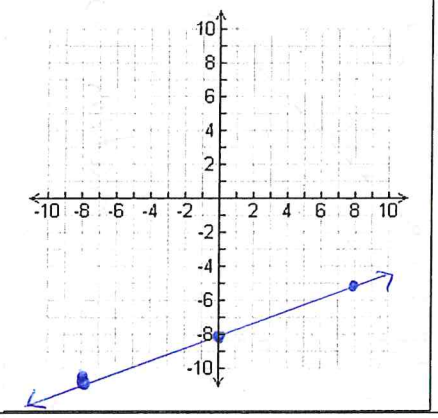
Solve each of the following systems by GRAPHING:

1. $x = -8y - 16$
   $-3x - 20 = -4y$



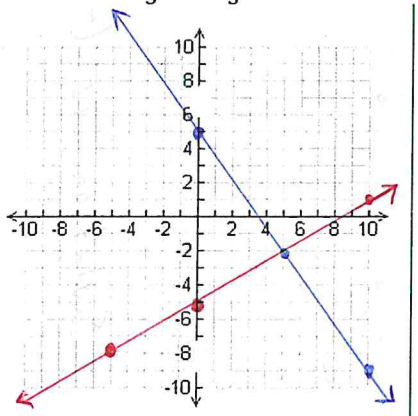
Solution is $(-8, -1)$

2. $-16y + 6x = 128$
   $-8y - 64 = -3x$



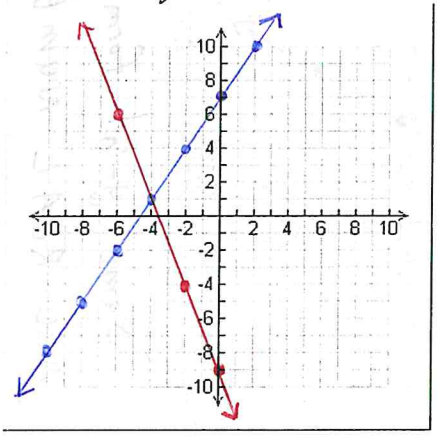
Same y-int form
ALL REAL NUMBERS

3. $5y + 7x = 25$
   $0 = x - \frac{5}{3}y - \frac{25}{3}$



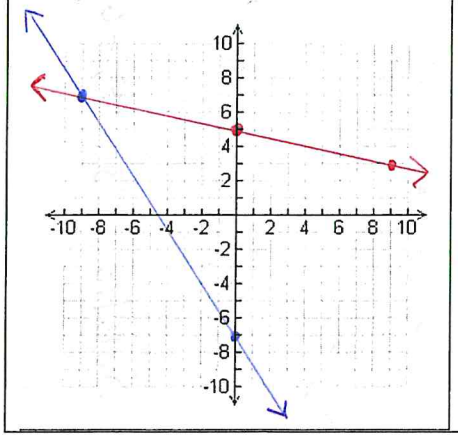
Solution is $(5, -2)$

4. $4y - 6x = 28$
   $-5x - 2y = 18$



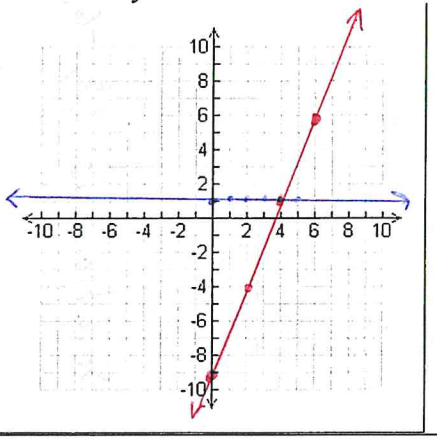
Solution is $(-4, 1)$

5. $0 = -14x - 63 - 9y$
   $9y = 45 - 2x$



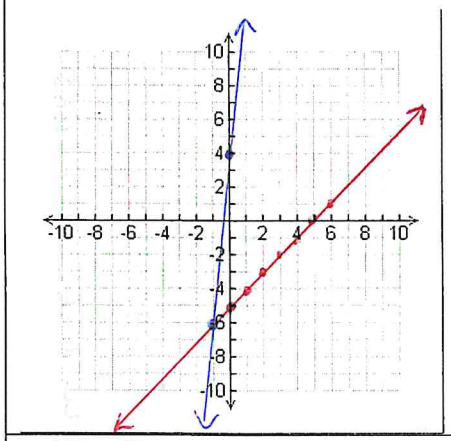
Solution is $(-9, 7)$

6. $-y + 1 = 0$
   $5x = 2y + 18$



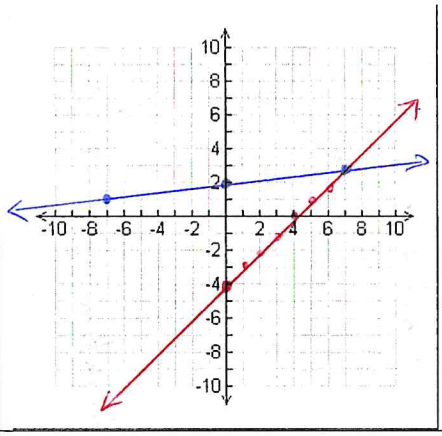
Solution is $(4, 1)$

7. $-10x = 4 - y$
$y + 5 - x = 0$



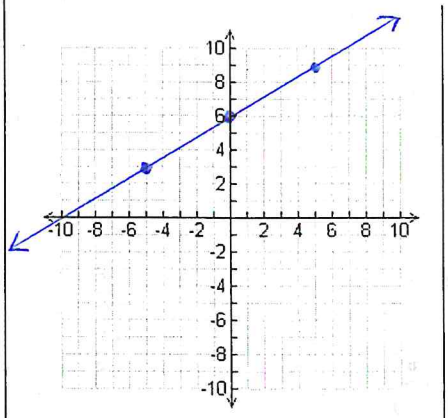
Solution is $(-1, -6)$

8. $14 + x = 7y$
$-4 + x = y$



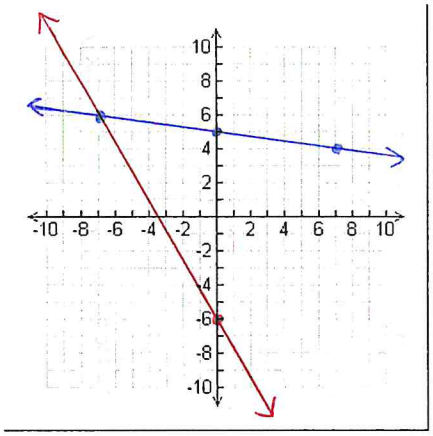
Solution is $(7, 3)$

9. $30 - 5y = -3x$
$-30 + 5y = 3x$



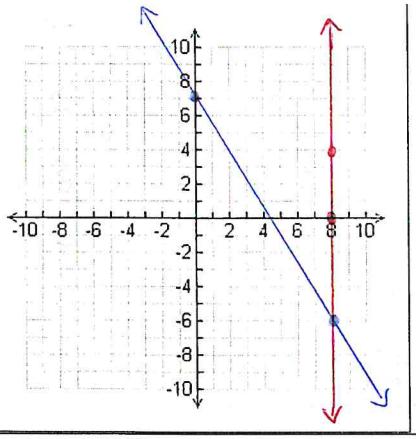
Same y-int form
ALL REAL NUMBERS

10. $0 = -x - 7y + 35$
$-y - 6 = \frac{12}{7}x$



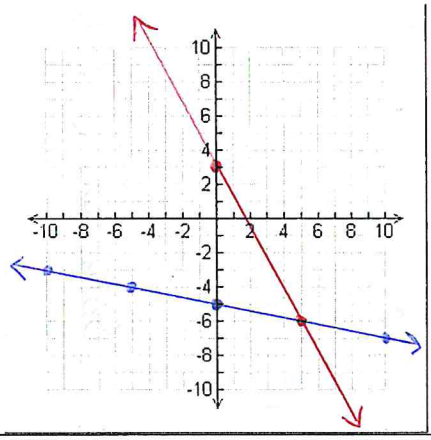
Solution is $(-7, 6)$

11. $-56 + 13x = -8y$
$x = 8$



Solution is $(8, -6)$

12. $-5y - 25 = x$
$15 - 5y = 9x$



Solution is $(5, -6)$

Top Equations

① $x = -8y - 16$

$+16 \quad +16$

$x + 16 = -8y$

$\frac{x}{-8} + \frac{16}{-8} = \frac{-8y}{-8}$

$\boxed{-\frac{1}{8}x - 2 = y}$

② $-16y + 6x = 128$

$-6x \quad -6x$

$-16y = -6x + 128$

$\frac{-16y}{-16} = \frac{-6x}{-16} + \frac{128}{-16}$

$y = \frac{6 \div 2}{16 \div 2}x - 8$

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

③ $5y + 7x = 25$

$-7x \quad -7x$

$5y = -7x + 25$

$\frac{5y}{5} = \frac{-7x}{5} + \frac{25}{5}$

$\boxed{y = -\frac{7}{5}x + 5}$

④ $4y - 6x = 28$

$+6x \quad +6x$

$4y = 6x + 28$

$\frac{4y}{4} = \frac{6x}{4} + \frac{28}{4}$

$y = \frac{6 \div 2}{4 \div 2}x + 7$

$\boxed{y = \frac{3}{2}x + 7}$

Bottom Equations

$\frac{-3x}{-4} - \frac{20}{-4} = \frac{-4y}{-4}$

$\boxed{\frac{3}{4}x + 5 = y}$

$-8y - 64 = -3x$

$+64 \quad +64$

$\frac{-8y}{-8} = \frac{-3x}{-8} + \frac{64}{-8}$

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

$3\left[0 = x - \frac{5}{3}y - \frac{25}{3}\right]3$

$0 = 3x - 5y - 25$

$-3x + 25 \quad -3x \quad +25$

$\frac{-3x}{-5} + \frac{25}{-5} = \frac{-5y}{-5}$

$\boxed{\frac{3}{5}x - 5 = y}$

$-5x - 2y = 18$

$+5x \quad +5x$

$\frac{-2y}{-2} = \frac{5x}{-2} + \frac{18}{-2}$

$\boxed{y = \frac{-5}{2}x - 9}$

Top Equation

(5) $0 = -14x - 63 - 9y$

$+14x+63 \quad +14x \quad +63$

$$\frac{14x}{-9} + \frac{63}{-9} = \frac{-9y}{-9}$$

$$\boxed{\frac{-14}{9}x - 7 = y}$$

Bottom Equation

$$\frac{9y}{9} = \frac{45}{9} - \frac{2x}{9}$$

$$y = 5 - \frac{2}{9}x$$

Rearranged

$$\boxed{y = -\frac{2}{9}x + 5}$$

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(6) $-y + 1 = 0$

$\quad -1 \quad -1$

$$\frac{-y}{-1} = \frac{-1}{-1}$$

$$\boxed{y = 1}$$

$$5x = 2y + 18$$

$\quad -18 \quad\quad -18$

$$\frac{5x}{2} - \frac{18}{2} = \frac{2y}{2}$$

$$\boxed{\frac{5}{2}x - 9 = y}$$

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(7) $-10x = 4 - y$

$\quad\quad -4 \quad -4$

$$\frac{-10x}{-1} - \frac{4}{-1} = \frac{-y}{-1}$$

$$\boxed{10x + 4 = y}$$

$$y + 5 - x = 0$$

$\quad -5 \quad +x \quad\quad +x \quad -5$

$$\boxed{y = x - 5}$$

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(8) $\frac{14}{7} + \frac{x}{7} = \frac{7y}{7}$

$$2 + \frac{1}{7}x = y$$

Rearranged

$$\boxed{\frac{1}{7}x + 2 = y}$$

$$-4 + x = y$$

Rearranged

$$\boxed{x - 4 = y}$$

Top Equation

(9) $30 - 5y = -3x$

$-30 \qquad\qquad -30$

$\frac{-5y}{-5} = \frac{-3x}{-5} - \frac{30}{-5}$

$\boxed{y = \frac{3}{5}x + 6}$

Bottom Equation

$-30 + 5y = 3x$

$+30 \qquad\qquad +30$

$\frac{5y}{5} = \frac{3x}{5} + \frac{30}{5}$

$\boxed{y = \frac{3}{5}x + 6}$

(10) $0 = -x - 7y + 35$

$+7y \qquad\qquad +7y$

$\frac{7y}{7} = \frac{-x}{7} + \frac{35}{7}$

$\boxed{y = -\frac{1}{7}x + 5}$

$-y - 6 = \frac{12}{7}x$

$+6 \qquad\qquad +6$

$\frac{-y}{-1} = \frac{\frac{12}{7}x}{-1} + \frac{6}{-1}$

$\boxed{y = -\frac{12}{7}x - 6}$

(11) $\frac{-56}{-8} + \frac{13x}{-8} = \frac{-8y}{-8}$

$7 - \frac{13}{8}x = y$

Rearranged

$\boxed{-\frac{13}{8}x + 7 = y}$

$\boxed{x = 8}$

(12) $-5y - 25 = x$

$+25 \qquad\qquad +25$

$\frac{-5y}{-5} = \frac{x}{-5} + \frac{25}{-5}$

$\boxed{y = -\frac{1}{5}x - 5}$

$15 - 5y = 9x$

$-15 \qquad\qquad -15$

$\frac{-5y}{-5} = \frac{9x}{-5} - \frac{15}{-5}$

$\boxed{y = -\frac{9}{5}x + 3}$