Solving Systems by Graphing

October-30-18
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PRE-CALCULUS 11
INEQUALITIES & SYSTEMS OF EQUATIONS
SOLVING SYSTEMS BY GRAPHING

A. Definitions

1. **linear system:** a set of equations where all equations are linear.
2. **non-linear system:** a set of equations where at least one of the equations is non-linear.
3. **solving a system:** determining the coordinates of the point of intersection.
4. **coincident lines:** when two lines sit on top of one another

B. Graphing a Linear System

Solve the following linear system.

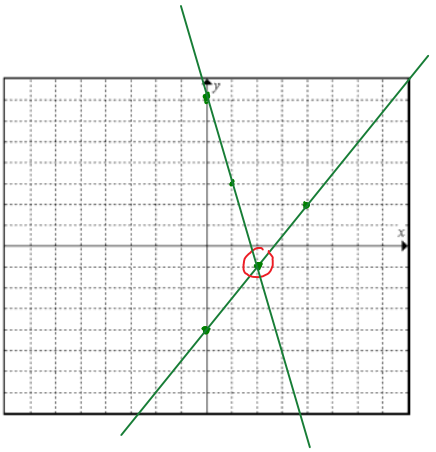
1) $3x-2y=8$
$4x+y=7$

$3x-2y=8$ $\quad -8x \quad -3x$ $\qquad 4x+y=7$ $\quad -4x \quad -4x$

$\frac{-2y}{-2} = \frac{-3x+8}{-2} \frac{}{-2}$

$y=\frac{3}{2}x-4 \qquad y=-4x+7$

Solution $(2,-1)$



2) $2x+5y=20$
$x-y=3$

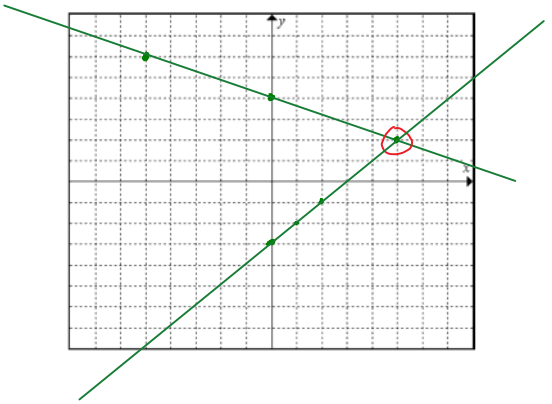
$2x+5y=20$ $\quad -2x \quad -2x$ $\qquad x-y=3$ $\quad +x \quad -x$

$\frac{5y}{5} = \frac{-2x+20}{5} \frac{}{5} \qquad \frac{-y}{-1} = \frac{-x+3}{-1}$

$y=-\frac{2}{5}x+4 \qquad y=x-3$

$-\frac{2}{5} \neq \frac{2}{-5}$

Solution $(5,2)$



3) $4x-2y=6$
$8x-4y-12=0$

$4x-2y=6$ $\quad -4x \quad -4x$

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

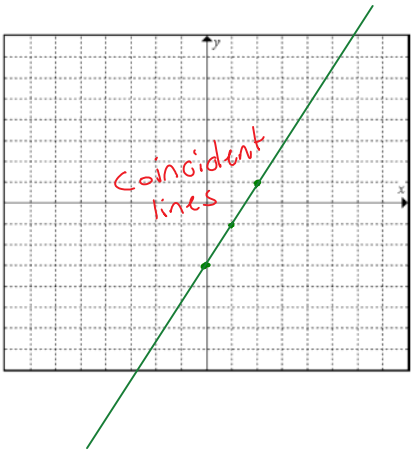
$y = 2x - 3$

$8x-4y-12=0$ $\quad -8x \quad +12 \quad -8x+12$

$\frac{-4y}{-4} = \frac{-8x}{-4} + \frac{12}{-4}$

$y = 2x - 3$

Infinite Solutions



B. Graphing a Non-Linear System

1) $y=x^2-4$
$x-y=-2$

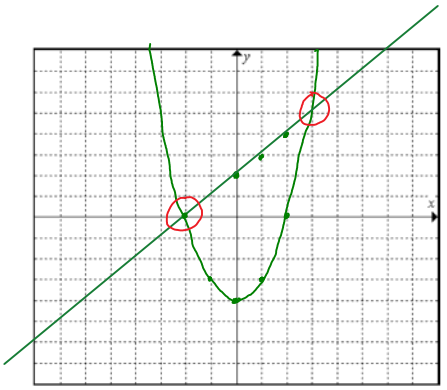
$y = x^2 - 4$
$y = (x+2)(x-2)$

$-x \quad -y = -2 \quad -x$

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

$y = x + 2.$

Solutions $(-2,0)$ & $(3,5)$



Assignment: Solving Systems of Equations Assignment #1 - 12

PRE-CALCULUS 11
INEQUALITIES & SYSTEMS OF EQUATIONS
SOLVING SYSTEMS BY GRAPHING ASSIGNMENT

Solve the following systems of equations by graphing.

1) $2x + y = 4$
$x + y = 3$

2) $3x - 2y = 6$
$2x + 3y = -9$

3) $y = x^2$
$y = x + 2$

4) $x + y = 5$
$3x + y = 3$

5) $x + y = 7$
$-3x - 3y = -21$

6) $y = (x-2)^2 - 2$
$y = x - 2$

7) $y = x^2 - 3$
$y = -\frac{1}{2}x^2 + 3$

8) $x - 2y = 10$
$3x - y = 0$

9) $x - 4y = -16$
$y = -2(x-4)^2 + 3$

10) $y = 2x^2 - 4x - 6$
$2x - y = 6$

11) $4x - y = 3$
$2x + y = 3$

12) $y = (x+3)^2 - 1$
$y = -(x+1)^2 + 3$

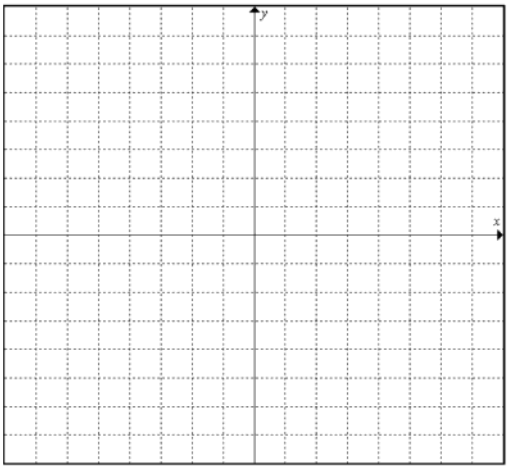
Answers

1) $(1,2)$ 2) $(0,-3)$ 3) $(-1,1)$ & $(2,4)$

4) $(-1,6)$ 5) Infinite 6) $(1,-1)$ & $(4,2)$

7) $(-2,1)$ & $(2,1)$ 8) $(-2,-6)$ 9) No Solution

10) $(0,-6)$ & $(3,0)$ 11) $(1,1)$ 12) $(-3,-1)$ & $(-1,3)$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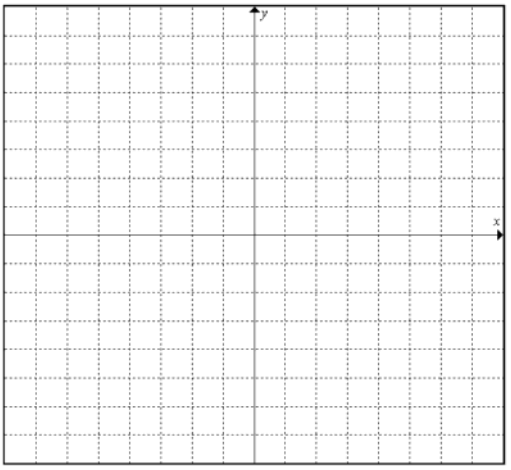
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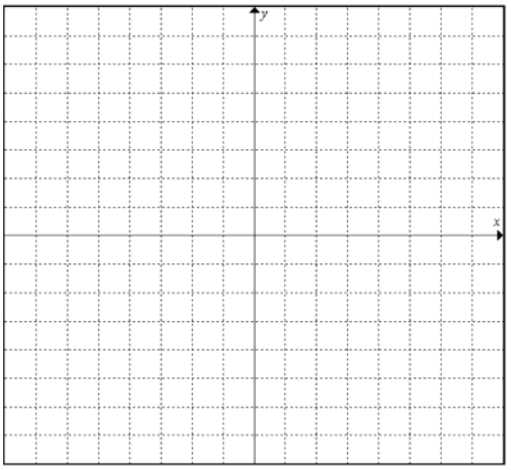
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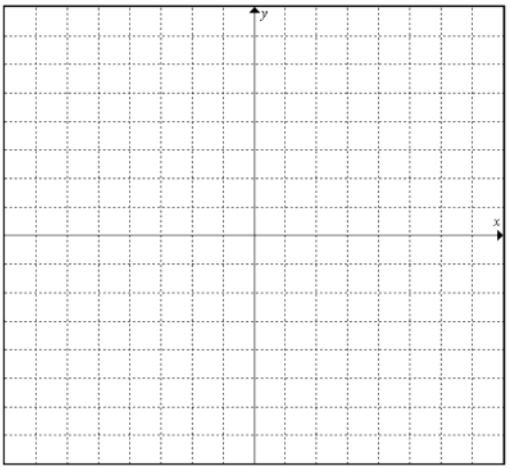
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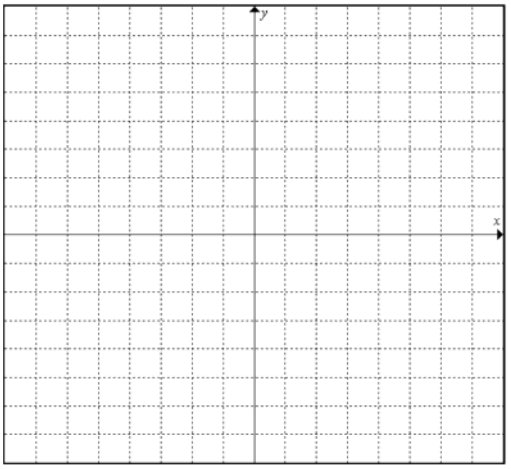
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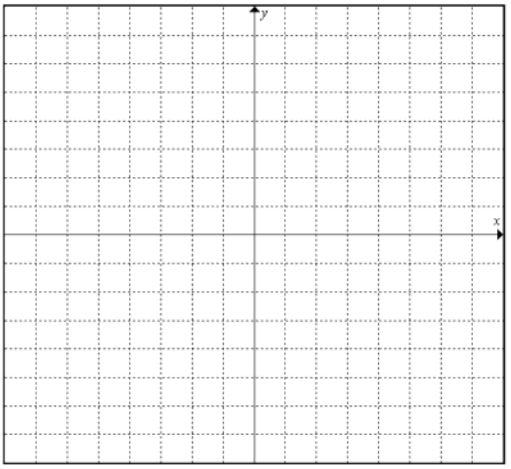
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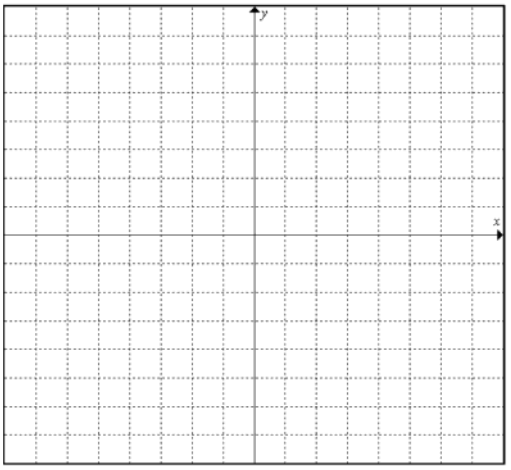
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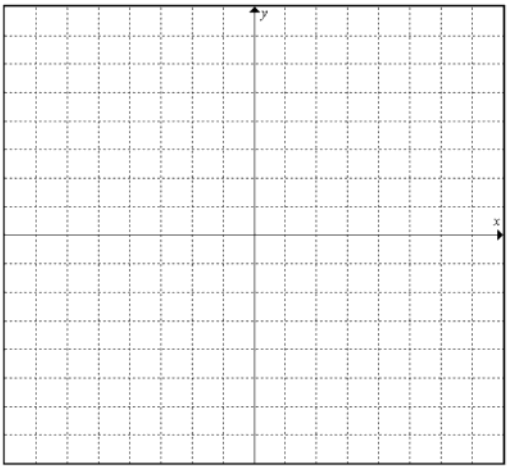
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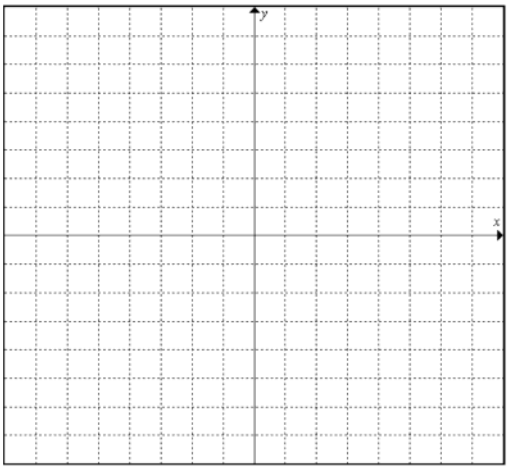
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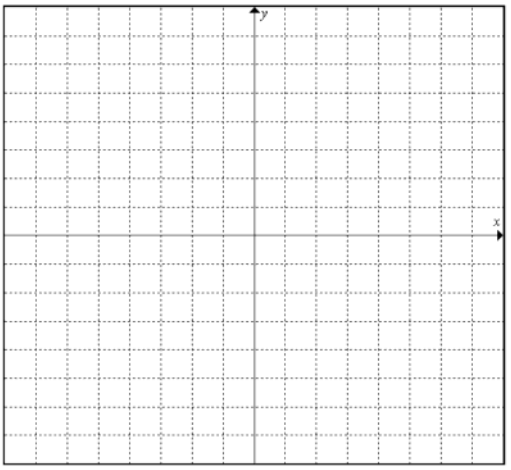
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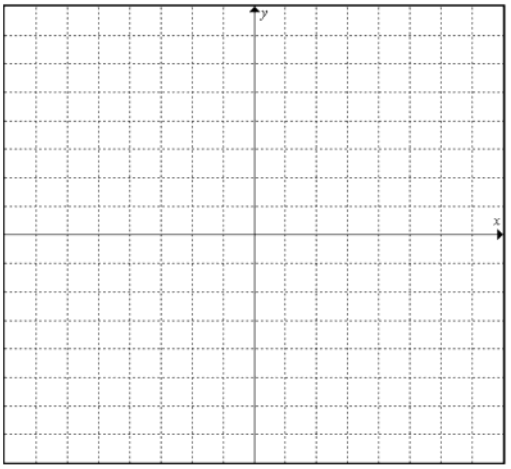
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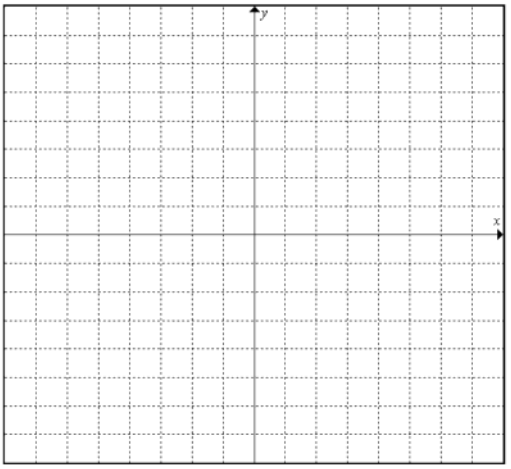
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