Algebra II
Review 2-1 to 2-3

Name KEY

Solve each system of equations using the ***substitution*** method. Show your work!

1) $x = 6 + y$
$2x + y = 0$

$2(6+y)+y=0$
$12+2y+y=0$
$12+3y=0$
$3y=-12$
$y=-4$

$x=6+y$
$x=6+(-4)$
$x=2$

$(2,-4)$

2) $3x + 5y = 15$
$x - y = 4 \rightarrow x = y+4$

$3(y+4)+5y=15$
$3y+12+5y=15$
$8y+12=15$
$8y=3$
$y=\frac{3}{8}$

$x=y+4$
$x=\frac{3}{8}+4$
$x=4\frac{3}{8}$ $\left(4\frac{3}{8}, \frac{3}{8}\right)$

3) $6x - 3y = 9$
$\frac{y+3}{2} = x$

$3\not{6}\left(\frac{y+3}{\not{2}_1}\right)-3y=9$
$3y+9-3y=9$
$9=9$
true statement

Infinitely many solutions

Solve each system of equations using the ***elimination*** method. Show your work!

4) $7y - 2x = 10$
$2y + 2x = -1$

$9y=9$
$y=1$

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

$\left(-\frac{3}{2}, 1\right)$

5) $2(2x - y = -1)$
$3x + 2y = 30$

$4x-2y=-2$
$3x+2y=30$

$7x=28$
$x=4$

$3x+2y=30$
$3(4)+2y=30$
$12+2y=30$
$2y=18$
$y=9$

$(4,9)$

6) $-2(3x + 5y = 10)$
$3(2x - 3y = 4)$

$-6x-10y=-20$
$6x-9y=12$

$-19y=-8$
$y=8/19$

Start over, cancel y

$9x+15y=30$
$10x-15y=20$

$19x=50$
$x=50/19$ $\left(\frac{50}{19}, \frac{8}{19}\right)$

For each system, fill in the blanks with the number(s) you would need to multiply each equation by to ***eliminate*** (cancel) "y". If an equation should not change, write "no change".

7) no chg $2x - 8y = 1$
4 $5x + 2y = -1$

8) -3 $x + \frac{1}{3}y = 9$
no chg $3x + y = 7$

9) 2 $x - 6y = 0$
-3 $6x - 4y = 3$

4 Answers may vary 4

Solve each system of equations using the ***graphing*** method. Show your graphs, but write the solution in the blank! Solve for y on this page if necessary. Graphs on next page.

10) $x + 1 = y$
$2x - 2y = 8$

$-2y = -2x + 8$
$y = x - 4$

Solution: $\varnothing$

11) $2x + 3y = 12$
$y = 2x - 4$

$3y = -2x + 12$
$y = -\frac{2}{3}x + 4$

Solution: $(3, 2)$

12) $x + y = 6 \rightarrow y = -x + 6$
$3x - 4y = 4$

$-4y = -3x + 4$
$y = \frac{3}{4}x - 1$

Solution: $(4, 2)$

Solve each ***system of inequalities***. Shade the proper area on the graph to show the solutions. Solve for y on this page if necessary. Graphs on next page

13) $y + 2 \leq 7$
$y + 4 \geq -3x$

14) $y > |x| - 2$
$y < |x + 1| + 4$

15) $y \leq -2|x|$
$x < 1$
$3y + 3x \geq -9$

Solve each of these systems with whatever method you feel is best.

16) $-2(8x + 3y + 5 = 0)$
$10x + 6y + 13 = 0$

$(\frac{1}{2}, -3)$

$-16x - 6y - 10 = 0$
$10x + 6y + 13 = 0$

$-6x + 3 = 0$
$-6x = -3$
$x = \frac{1}{2}$

$8x + 3y + 5 = 0$
$8(\frac{1}{2}) + 3y + 5 = 0$
$4 + 3y + 5 = 0$
$3y + 9 = 0$
$3y = -9$
$y = -3$

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

$(2, 1)$

Graph is on next page

18) $\frac{x}{4} - \frac{y}{3} = 1$ and $\frac{1}{3}x - \frac{4}{9}y = \frac{4}{3}$

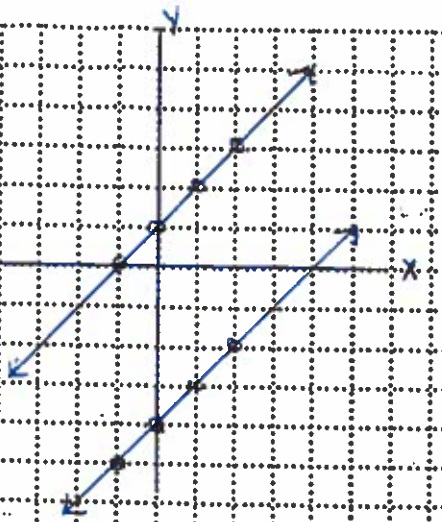
Get common denominators first.

$\frac{3x}{12} - \frac{4y}{12} = \frac{12}{12}$ $\quad \frac{3}{9}x - \frac{4}{9}y = \frac{12}{9}$

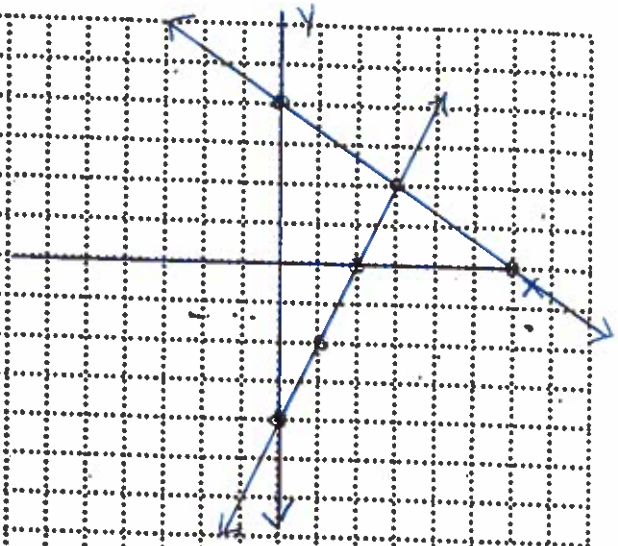
$3x - 4y = 12$ $\quad 3x - 4y = 12$

Same equation: Infinitely many solutions

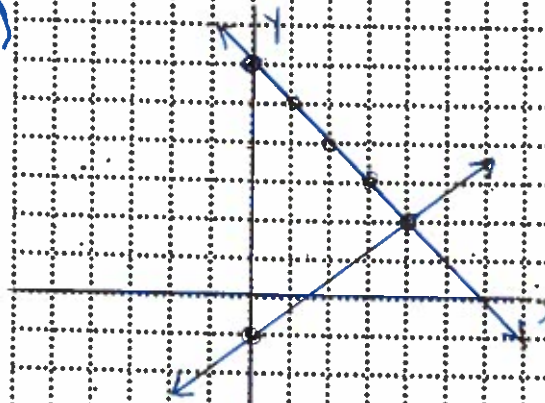
10)



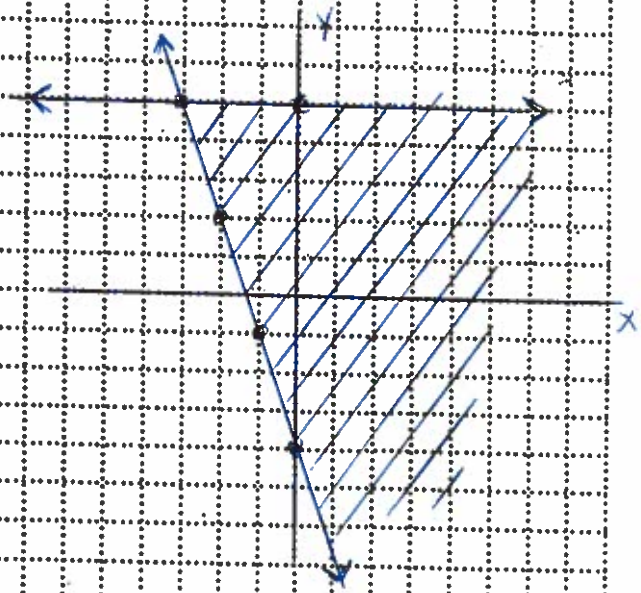
11)



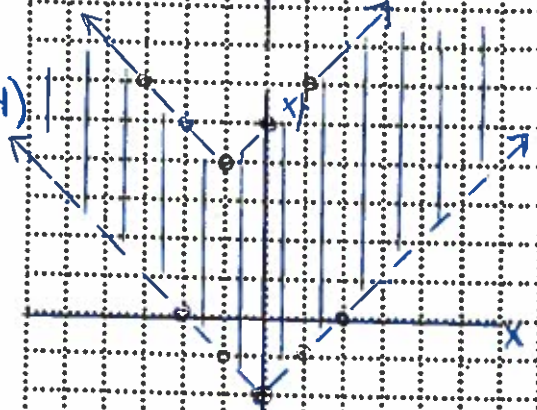
12)



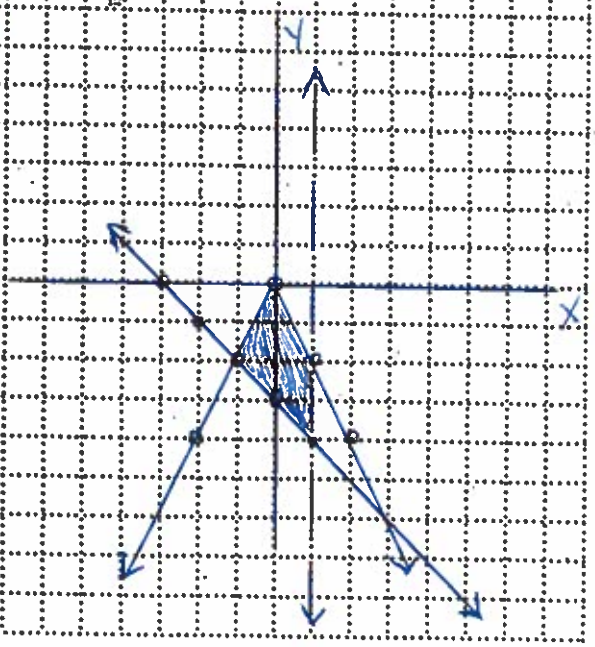
13)



14)



15)



17)