Name: _____

GMBMPs Study Guide

(7, -1)

Solve the system algebraically.

1. $x + 7y = 0$
   $2x - 8y = 22$

$x = -7y$
$2(-7y) - 8y = 22$
$-14y - 8y = 22$
$-22y = 22$
$y = -1$
$x = -7(-1)$
$x = 7$

2. $3x - 5y = 17$
   $y = -3$

$3x - 5(-3) = 17$
$3x + 15 = 17$
$3x = 2$
$x = 2/3$

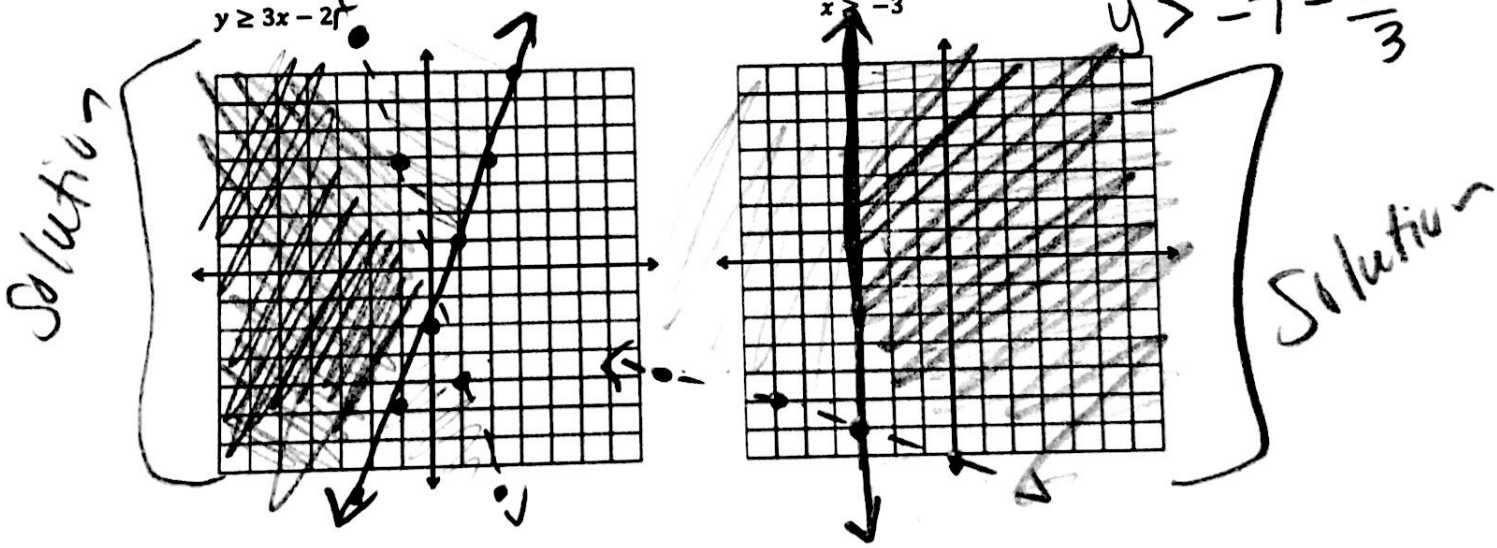
(2/3, -3)

Graph each system of inequalities.

3. $y < -4x$
   $y \geq 3x - 2$

4. $-x - 3y < 21$
   $x \geq -3$

$-3y < 21 + x$
$y > -7 - \frac{x}{3}$



Solve the following absolute value equations:

5. $2|x + 4| + 10 = 16$

$2|x+4| = 6$
$|x+4| = 3$

$x+4 = 3 \quad x+4 = -3$

$x = -1$ or $x = -7$

6. $4|x - 2| + 16 = 16$

$4|x-2| = 0$
$|x-2| = 0$
$x - 2 = 0$

$x = 2$

Name: _____

Set up and solve the following systems of equations problems.

7. Jones Cleaning Service charges a $30 fee to come to your house and $10 per room. Smiths Cleaning Service only charges a $10 fee to come to your hour but $12.50 per room. How many rooms does a house need to have for both cleaning services to charge the same amount?

J: $y = 30 + 10x$

S: $y = 10 + 12.5x$

8 rooms

$30 + 10x = 10 + 12.5x$

$20 = 2.5x$

$x = 8$

8. Jet has 40 coins, all dimes and quarters, worth $7.60. How many dimes and how many quarters does Jet have?

$d + q = 40 \quad q = 40 - d$

$.1d + .25q = 7.60$

16 dimes 24 quarters

$.1d + .25(40 - d) = 7.6$

$.1d + 10 - .25d = 7.6$

$-.15d + 10 = 7.6$

$-.15d = -2.4$

$d = 16$

Find the following Inverses:

9. $f(x) = 5x + 2$

$x = 5y + 2$

$x - 2 = 5y$

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

10. $f(x) = \frac{7x+9}{6}$

$x = \frac{7y+9}{6}$

$6x = 7y + 9$

$6x - 9 = 7y$

$\frac{6x-9}{7} = y$

11. $f(x) = \sqrt{x+5} + 2$

$x = \sqrt{y+5} + 2$

$x - 2 = \sqrt{y+5}$

$(x-2)^2 = y + 5$

$y = (x-2)^2 - 5$

12. $f(x) = \{(1,-2), (-2,1), (0,7)\}$

$f^{-1}(x) = \{(-2,1), (1,-2), (7,0)\}$

Composition of Functions

Given $f(x) = 4x + 2$, $g(x) = 5x - 1$, and $h(x) = x^2 + 12$ find the following:

13. $(g \circ f)(x)$

$5(4x+2) - 1$

$20x + 10 - 1$

$20x + 9$

14. $g(h(x))$

$5(x^2+12) - 1$

$5x^2 + 60 - 1$

$5x^2 + 59$

15. $(h \circ f)(x)$

$= (4x+2)^2 + 12$

16. $(f \circ h)(x)$

$4(x^2+12) + 2$

$4x^2 + 48 + 2$

$4x^2 + 50$

17. $f(g(-3))$

$g(-3) = 5(-3) - 1$

$-15 - 1$

-16

$f(-16) = 4(-16) + 2$

-62