INTERMEDIATE ALGEBRA EXAM 4 J* NAME _____

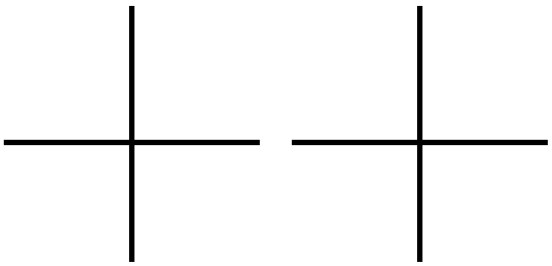
SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers.
TURN IN ALL WORKSHEETS. CALCULATORS ARE PERMITTED ON THIS TEST.

1. Graph the equations:

a) $y = -\frac{3}{2}x - 2$

slope = ____

***y*-int = ____**



b) $3x - 4y = 12$

***x*-int = ____**

***y*-int = ____**

slope = ____

2. Given the points (– 6, 2) and (– 4, – 6), find:

a) midpoint **b) slope** **c) distance**

3. Find the equation of the line (in y = m*x* + b form) passing through (–1 , 2) and (3 , 7).

In 4 - 5, find the equation of the line (y=m*x*+b form) that passes through (–5 , 2) and is

4. parallel to $5x + 4y = 10$.

5. perpendicular to $5x + 4y = 10$.

In 6 – 9, solve the systems of equations. Show <u>all</u> work algebraically!

6. $9x - 4y = 2$
$2x + 5y = -29$

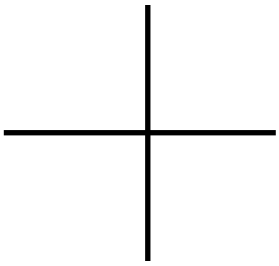
7. $y = 4x - 25$
$x = 3y - 2$

8. $12y + 5x = 41$
$3y + x = 4$

9. $4x - 2y = -8$
$y = 2x + 4$

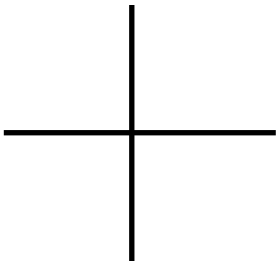
10. Graph the <u>union</u> of

$y \geq -3x + 3$
$y < x - 3$



11. Graph the <u>intersection</u> of

$3x - y > -6$
$2x + 5y \leq -10$



12. If $f(x) = \dfrac{x}{x+6}$

a) f(0) = **b) f(–2) =** **c) f(6) =**

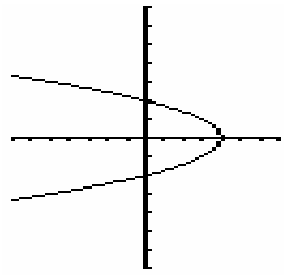
d) f(–6) = **e) f(Junk)=**

In 13 - 14, find the domain (interval notation when appropriate):

13a) $y = \dfrac{4+3x}{x}$ **b)** $y = \dfrac{x^2-4}{x^2+5x-14}$ **14a)** $y = x^2 - 49$ **b)** $y = \sqrt{16-2x}$

In 15-16, find the domain and range of each of the following graphs. Determine whether each is a function or not a function.

15.

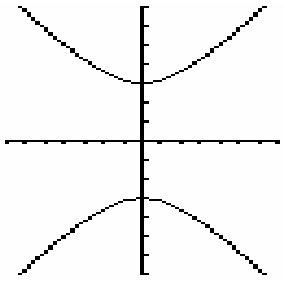


Domain: _____

Range: _____

Function? _____

16.



Domain: _____

Range: _____

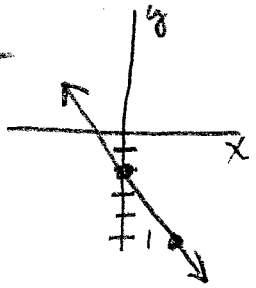
Function? _____

INTERMEDIATE ALGEBRA EXAM 4J* Solutions

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

slope $= -3/2$

y-int $= -2$



b) $3x - 4y = 12$

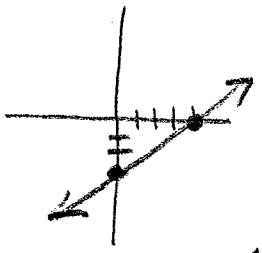
$-4y = -3x + 12$

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

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

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

$m = 3/4$



2. $(-6,2)$ $(-4,-6)$

a) mid:

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

$x = -5$ $y = -2$

$(-5,-2)$

b) $m = \frac{RISE}{RUN} = \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{-6-2}{-4-(-6)} = \frac{-8}{2}$

$m = -4$

c) $d = \sqrt{2^2 + 8^2}$

$= \sqrt{4+64}$

$= \sqrt{68} = 2\sqrt{17} \approx 8.25$

3. $(-1,2)$ $(3,7)$

$m = \frac{7-2}{3-(-1)} = \frac{5}{4}$

$y = mx + b$

$2 = \frac{5}{4}(-1) + b$

$8 = -5 + 4b$

$13 = 4b$

$b = 13/4$

$y = \frac{5}{4}x + \frac{13}{4}$

4. $5x + 4y = 10$ $(-5,2)$

$4y = -5x + 10$

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

$m = -5/4$ $m_{par} = -5/4$

$y = mx + b$

$2 = -\frac{5}{4}(-5) + b$

$8 = 25 + 4b$

$-17 = 4b$ $b = -17/4$

$y = -\frac{5}{4}x - \frac{17}{4}$

5. $(-5,2)$

$m_\perp = 4/5$

$y = mx + b$

$2 = \frac{4}{5}(-5) + b$

$2 = -4 + b$

$b = 6$

$y = \frac{4}{5}x + 6$

6. $5(9x - 4y) = 5(2)$

$4(2x + 5y) = 4(-29)$

$45x - 20y = 10$

$8x + 20y = -116$

$53x = -106$

$x = -2$

$2(-2) + 5y = -29$

$5y = -25$

$y = -5$

$(-2,-5)$

7. $y = 4x - 25$

$x = 3y - 2$

$y = 4(3y-2) - 25$

$y = 12y - 8 - 25$

$-11y = -33$

$y = 3$

$x = 3(3) - 2$

$x = 7$

$(7,3)$

8. $12y + 5x = 41$

$-4(3y + x) = -4(4)$

$12y + 5x = 41$

$-12y - 4x = -16$

$x = 25$

$3y + 25 = 4$

$3y = -21$

$y = -7$

$(25,-7)$

9. $4x - 2y = -8$

$y = 2x + 4$

$4x - 2(2x+4) = -8$

$4x - 4x - 8 = -8$

$-8 = -8$

Same Line

10. $y \geq -3x + 3$

$y = -3x + 3$

y-int $= 3$

$m = -3/1$

Solid Line

Shade Above

$y < x - 3$

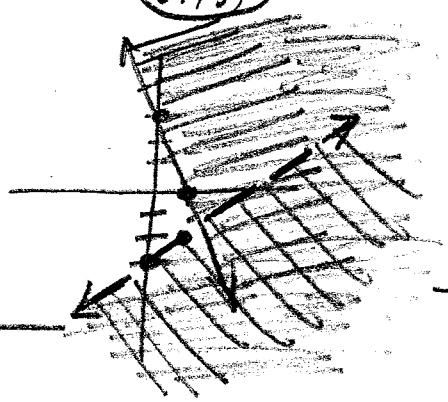
$y = x - 3$

y-int $= -3$

$m = 1$

Dotted Line

Shade Below



UNION = ALL SHADED AREAS.

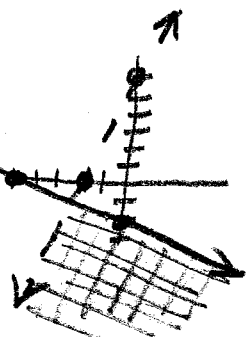
11. $3x - y > -6$

$3x - y = -6$

x	y
0	6
-2	0

Dotted Line

Shade Below



$2x + 5y \leq -10$

x	y
0	-2
-5	0

Solid Line

Shade Below

INTERSECT

COMMON TO BOTH

12. $f(x) = \frac{x}{x+6}$

a) $f(0) = \frac{0}{6} = 0$

b) $f(-2) = \frac{-2}{-2+6} = -1/2$

c) $f(6) = \frac{6}{12} = 1/2$

d) $f(-6) = \frac{-6}{0}$ = Undefined.

e) $f(J) = \frac{J}{J+6}$

13a) $y = \frac{4-3x}{x}$

D: all $x \neq 0$

b) $y = \frac{x^2 - 4}{x^2 + 5x - 14}$

$D = (x+7)(x-2) \neq 0$

D: all $x \neq -7, 2$

14a) $y = x^2 - 49$

No Denom!

No Radicals!

No Restrictions!

$D = (-\infty, \infty)$

b) $y = \sqrt{16 - 2x}$

$16 - 2x \geq 0$

$-2x \geq -16$

$x \leq 8$

$D = (-\infty, 8]$

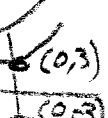
15.

D: $(-\infty, 4]$

R: $(-\infty, \infty)$

F: No

16.



D: $(-\infty, \infty)$

R: $(-\infty, -3] \cup [3, \infty)$

F: No