INTERMEDIATE ALGEBRA EXAM 4 H* NAME _____

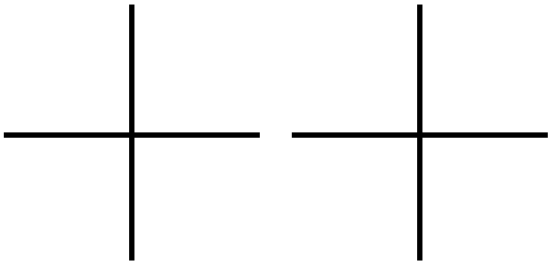
SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers.
TURN IN ALL WORKSHEETS. CALCULATORS ARE PERMITTED ON THIS TEST.

1. Graph the equations:

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

slope = ____

***y*-int = ____**



b) $4x - 3y = 12$

***x*-int = ____**

***y*-int = ____**

slope = ____

2. Given the points (8, – 6) and (– 2, – 4), find:

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

3. Find the equation of the line (in y = m*x* + b form) passing through (8 , –1) and (4 , 2).

In 4 - 5, find the equation of the line (y=mx+b form) that passes through (3 , – 5) and is

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

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

In 6 – 9, solve the systems of equations. Show work algebraically!

6. $3x + 7y = 6$
$2x + 3y = -1$

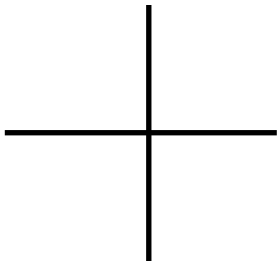
7. $5y - 3x = 34$
$x = 7 - 2y$

8. $9x - 4y = 2$
$2x + 5y = -29$

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

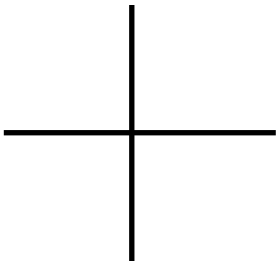
10. Graph the <u>intersection</u> of

$y \leq 3x + 3$
$y > -x - 3$



11. Graph the union of

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



12. If $f(x) = \dfrac{x-2}{x+6}$

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

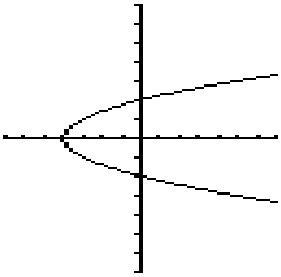
d) f(–6) = **e) f(Junk)=**

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

13a) $y = \dfrac{x^2-4}{x^2-5x-6}$ **b)** $y = x^2 - 9$ **14a)** $y = \sqrt{36-9x}$ **b)** $y = \dfrac{4-6x}{x}$

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.

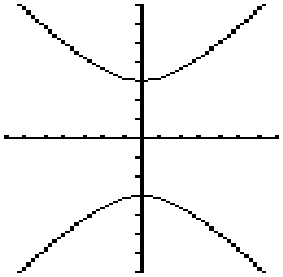


Domain: _____

Range: _____

Function? _____

16.



Domain: _____

Range: _____

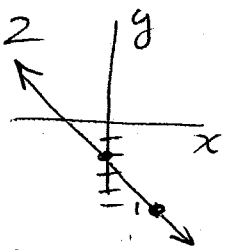
Function? _____

INTER ALG. EXAM 4H* Solutions

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

$m = -\frac{3}{2} \frac{\text{rise}}{\text{run}}$

$y\text{int} = -2$



b) $4x - 3y = 12$

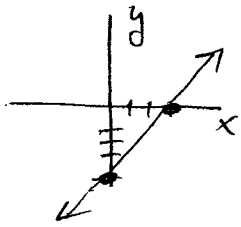
$x\text{int}: (y=0)\ x = 3$

$y\text{int}: (x=0)\ y = -4$

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

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

$m = 4/3$



2. $(8,-6)\ (-2,-4)$

a) $x = \frac{8+(-2)}{2} = 3$

$y = \frac{-6+(-4)}{2} = -5$

$(3,-5)$

b) $m = \frac{-4-(-6)}{-2-8} = \frac{2}{-10} = -\frac{1}{5}$

c) $d = \sqrt{10^2 + 2^2}$

$= \sqrt{104}$

$= 2\sqrt{26}$ or 10.20

3a) $(8,-1)\ (4,2)$

$m = \frac{2-(-1)}{4-8} = -\frac{3}{4}$

$y = mx + b$.

$2 = -\frac{3}{4}(4) + b$

$+3 \quad +3$

$5 = b$

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

4. $(3,-5)\quad 5x - 4y = 10$

$-4y = -5x + 10$

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

$m = \frac{5}{4}\quad m_{parallel} = \frac{5}{4}$

$y = mx + b$.

$-5 = \frac{5}{4}(3) + b$.

$-20 = 15 + 4b$.

$-15 \quad -15$

$-35 = 4b$.

$b = -\frac{35}{4}$

$y = \frac{5}{4}x - \frac{35}{4}$

5. $m_\perp = -\frac{4}{5}$

$y = mx + b$.

$-5 = -\frac{4}{5}(3) + b$.

$-25 = -12 + 5b$.

$+12 \quad +12$

$-13 = 5b$.

$b = -\frac{13}{5}$

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

6. $(3x + 7y = 6)\ 2$

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

$6x + 14y = 12$

$-6x - 9y = 3$

$5y = 15$

$y = 3$

$3x + 21 = 6$

$3x = -15$

$x = -5$

$(-5, 3)$

7. $5y - 3x = 34$

$x = 7 - 2y$

$5y - 3(7 - 2y) = 34$

$5y - 21 + 6y = 34$

$11y - 21 = 34$

$11y = 55$

$y = 5$

$x = 7 - 2(5)$

$x = -3\quad (-3, 5)$

8. $9x - 4y = 2\ 5$

$2x + 5y = -29\ 4$

$45x - 20y = 10$

$8x + 20y = -116$

$53x = -106$

$x = -2$

$9(-2) - 4y = 2$

$-4y = 20$

$y = -5$

$(-2, -5)$

9. $4x - 2y = 8$

$y = 2x + 4$

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

$4x - 4x - 8 = 8$

$-8 = 8$

No Solution.

Parallel lines

10. $y \le 3x + 3$

$y\text{int} = 3$

$m = \frac{3}{1}$

Solid Line

Below

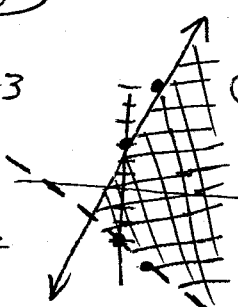
$y > -x - 3$

$y\text{int} = -3$

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

Dotted Line

Above



11. $3x + y > -6$

x	y
0	-6
-2	0

Dotted

Shade above

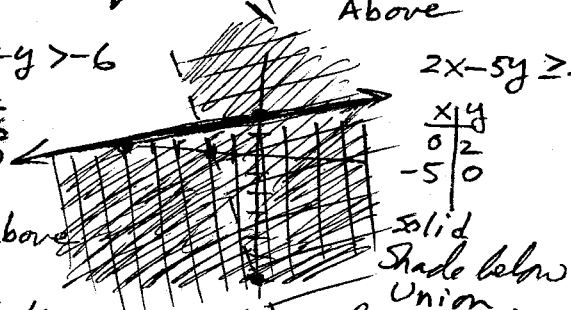
$2x - 5y \ge -10$

x	y
0	2
-5	0

Solid

Shade below

Union.



Solution = All shaded areas.

12. $f(x) = \frac{x-2}{x+6}$

a) $f(2) = \frac{2-2}{2+6} = \frac{0}{8} = 0$

b) $f(-2) = \frac{-2-2}{-2+6} = \frac{-4}{4} = -1$

c) $f(6) = \frac{6-2}{6+6} = \frac{4}{12} = \frac{1}{3}$

d) $f(-6) = \frac{-6-2}{-6+6} = \frac{-8}{0} =$ Undef

e) $f(\text{Junk}) = \frac{\text{Junk}-2}{\text{Junk}+6}$

13a) $x^2 - 5x - 6 \ne 0$

$(x-6)(x+1) \ne 0$

D: all $x \ne 6, -1$

b) $y = x^2 - 9$

D: all real x

$(-\infty, \infty)$

14a) $y = \sqrt{36 - 9x}$

D: $36 - 9x \ge 0$

$-9x \ge -36$

$x \le +4$

$(-\infty, 4]$

b) $y = \frac{4-6x}{x}$

D: all $x \ne 0$

15. D: $[-4, \infty)$

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

F? No

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

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

F? No