INTERMEDIATE ALGEBRA EXAM 4 I* NAME _____

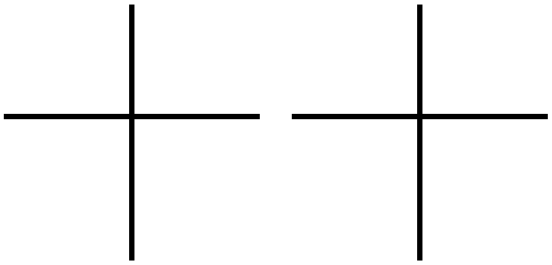
SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers.
TURN IN ALL WORKSHEETS. CALCULATORS ARE PERMITTED ON THIS TEST.

1. Graph the equations:

a) $y = -5x + 2$

slope = ____

***y*-int = ____**



b) $3x - 4y = -12$

***x*-int = ____**

***y*-int = ____**

slope = ____

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

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

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

In 4 - 5, find the equation of the line (y=mx+b form) that passes through (5 , – 3) 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. $5x + 3y = 14$
$9x + 4y = 7$

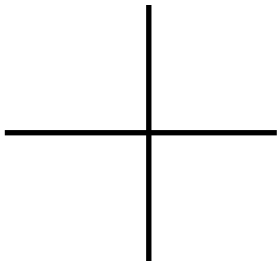
7. $y = 3x - 2$
$x = 5y + 24$

8. $50x - 9y = 1$
$-7x + 2y = -8$

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

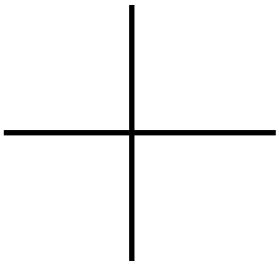
10. Graph the <u>union</u> of

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



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

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



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

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

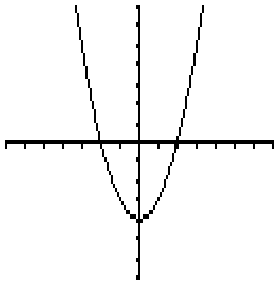
d) f(–6) = **e) f(Junk)=**

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

13a) $y = \dfrac{x^2-9}{x^2-5x-24}$ **b)** $y = \dfrac{4+3x}{x}$ **14a)** $y = \sqrt{36-9x}$ **b)** $y = x^2 - 16$

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.

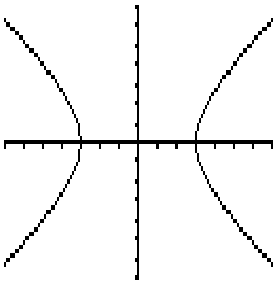


Domain: _____

Range: _____

Function? _____

16.



Domain: _____

Range: _____

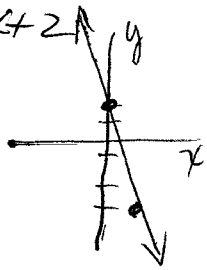
Function? _____

INTERMEDIATE ALGEBRA EXAM 4I Solutions

1a) $y = -5x + 2$

$m = -\frac{5}{1}$

$y$int $= 2$



b) $3x - 4y = -12$

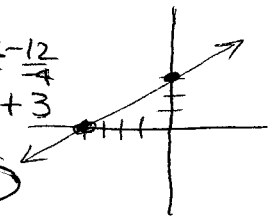
x	y
0	3 y-int
-4	0 x-int

$-4y = -3x - 12$

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

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

$m = \frac{3}{4}$



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

a) midpt: $\left(\frac{-8+(-2)}{2}, \frac{6+(-6)}{2}\right)$

$(-5, 0)$

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

$= \frac{-6-6}{-2-(-8)} = \frac{-12}{6} = -2$

3. $(2, -1)$ $(-4, 3)$

$m = \frac{3-(-1)}{-4-2} = \frac{4}{-6} = -\frac{2}{3}$

$y = mx + b$

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

$-3 = -4 + 3b$

$+4 \quad +4$

$1 = 3b$

$b = 1/3$

$y = mx + b$

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

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

$4y = -5x + 10$

$y = -\frac{5}{4}x + \frac{10}{4}$

$m = -5/4$

$m_{parallel} = -5/4$

$y = mx + b$

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

$-12 = -25 + 4b$

$13 = 4b$

$b = 13/4$

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

5. $m_{\perp} = 4/5$

$y = mx + b$

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

$-3 = 4 + b$

$-7 = b$

$y = \frac{4}{5}x - 7$

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

$= \sqrt{6^2 + 12^2}$

$= \sqrt{36 + 144} = \sqrt{180} = \sqrt{36}\sqrt{5}$

$6\sqrt{5}$ or 13.42

6. $4(5x + 3y = 14)$

$-3(9x + 4y = 7)$

$20x + 12y = 56$

$-27x - 12y = -21$

$-7x = 35$

$x = -5$

$-25 + 3y = 14$

$3y = 39$

$y = 13$

$(-5, 13)$

7. $y = 3x - 2$

$x = 5y + 24$

$x = 5(\ ) + 24$

$x = 5(3x - 2) + 24$

$1x = 15x - 10 + 24$

$-15x \quad -15x$

$-14x = 14$

$x = -1$

$y = 3x - 2$

$y = -3 - 2 = -5$

$(-1, 5)$

8. $2(5x - 9y = 1)$

$9(7x + 2y = -8)$

$100x - 18y = 2$

$-63x + 18y = -72$

$37x = -70$

$x = -\frac{70}{37}$

9. $4x - 2y = 8$

$y = 2x - 4$

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

$4x - 4x + 8 = 8$

$8 = 8$

Same Line

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

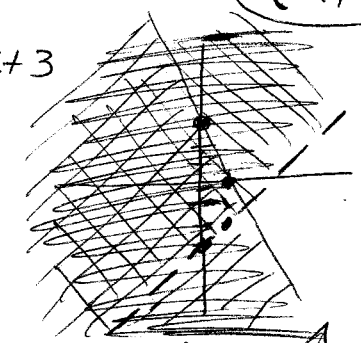
$y \leq -3x + 3$

$y$int $= +3$

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

Solid Line

Shade Below



$y > x - 3$

$y$int $= -3$

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

Dotted Line

Shade Above.

Union = Shade ALL!

11. $3x - y \geq -6$

x	y
0	6
-2	0

Solid Line

Shade Below

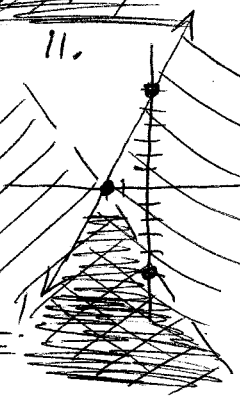
$2x + 5y < -10$

x	y
0	-2
-5	0

Dotted Line

Shade Below

Intersection = Common to Both



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

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

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

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

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

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

13a) $y = \frac{x^2 - 9}{x^2 - 5x - 24}$

$x^2 - 5x - 24 \neq 0$

$(x - 8)(x + 3) \neq 0$

$D: x \neq 8, x \neq -3$

b) $y = \frac{4 + 3x}{x}$

D: all $x \neq 0$

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

$36 - 9x \geq 0$

$-9x \geq -36$

$x \leq 4$

$(-\infty, 4]$

d) No restrictions

$(-\infty, \infty)$

15a) $D: (-\infty, \infty)$

b) $R: [-4, \infty)$

c) F? Yes

16a) $D: (-\infty, -3] \cup [3, \infty)$

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

c) F? No