INTERMEDIATE ALGEBRA EXAM 4 E* NAME _____

SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers.

TURN IN ALL WORKSHEETS. CALCULATORS ARE REQUIRED ON THIS TEST.

1. Graph the equations:

a) $Y = -3X - 2$

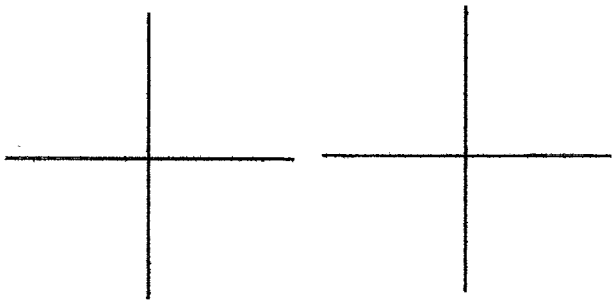
slope = ____

Y-int = ____

b) $2X - 6Y = -12$

X-int = ____

Y-int = ____



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

a) midpoint b) slope c) distance

3 Find the slope of a line that

a) is parallel to $Y = -3X + 10$.

b) is perpendicular to $Y = -3X + 10$.

4 Find the equation of the line (in y=mx+b form)

a) passing through (5, -2) with slope -4.

b) passing through (5, -2) and perpendicular to $3X + 2Y = 6$.

In 5 - 8, solve the system of equations. (Show all work!)

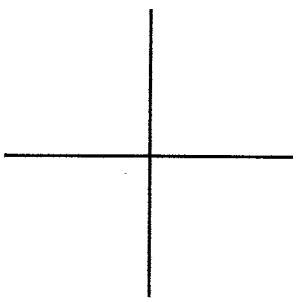
5. $4X - Y = 3$
$-2X + 3Y = 1$

6. $X = 6 - 3Y$
$3X + 9Y = 18$

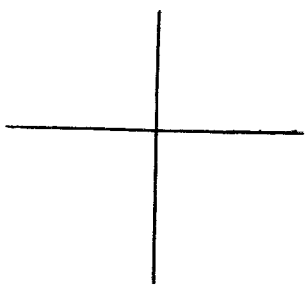
7. $50X - 9Y = 1$
$7X - 2Y = -8$

8. $5Y - 3X = 5$
$X = 2Y + 1$

9a) Graph the intersection of the inequalities: $X - 2Y \leq 6$
$Y > -X + 4$



b) Graph the union of the inequalities above:



10. If $f(X) = \frac{X - 5}{X}$ and $g(X) = -2X + 5$,

a) $f(-5) =$ b) $g(-5) =$

c) $f(0) =$ d) $g(\text{Junk}) =$

11. Find the domain (give interval notation when appropriate):

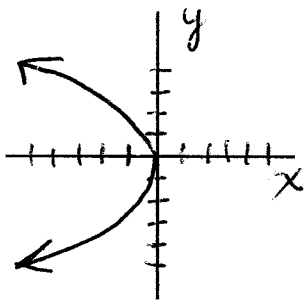
a) $Y = \sqrt{6 - X}$ b) $Y = \frac{X - 4}{X - 2}$ c) $Y = X^2 - 9$ d) $Y = \frac{X}{X^2 - 7X - 8}$

12. Find the domain and range of each of the following graphs. Determine whether each is a function or not a function.

Domain: _____

Range: _____

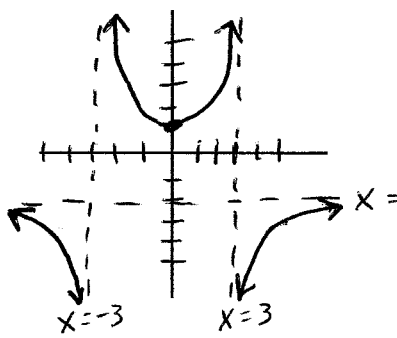
Function? _____



Domain: _____

Range: _____

Function? _____

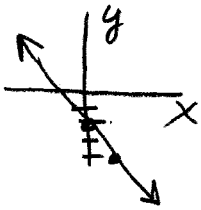


INTERMEDIATE ALGEBRA EXAM 4E* Solutions

1a) $y = -3x - 2$

slope $= -3$

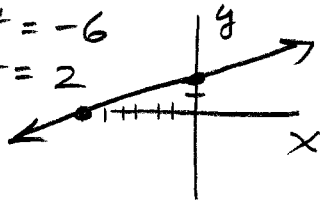
y int $= -2$



b) $2x - 3y = -12$

x int $= -6$

y int $= 2$



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

a) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$= \left(\frac{4+(-2)}{2}, \frac{-2+6}{2}\right) = (1,2)$

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

$= \frac{6-(-2)}{-2-4} = \frac{8}{-6} = -\frac{4}{3}$

c) $d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$= \sqrt{6^2+8^2}$

$= \sqrt{36+64} = \sqrt{100} = 10$

3. $y = -3x + 10$

a) m parallel

Same slope $= -3$

b) $m_\perp$ = Neg recip.

$= \frac{1}{3}$

4a) $m = -4$, $(5,-2)$

$y = mx + b$

$-2 = (-4)(5) + b$

$-2 = -20 + b$

$18 = b$

$y = -4x + 18$

4b) $3x + 2y = 6$

$2y = -3x + 6$

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

$m_\perp = \frac{2}{3}$

$y = mx + b$

$-2 = \frac{2}{3}(5) + b$

$-6 = 10 + 3b$

$b = -\frac{16}{3}$

$y = \frac{2}{3}x - \frac{16}{3}$

5. $4x - y = 3$

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

$4x - y = 3$

$-4x + 6y = 2$

$5y = 5$

$y = 1$

$4x - 1 = 3$

$4x = 4$

$x = 1$

$(1,1)$

Ch:

$-2x + 3y = 1$

$-2 + 3 = 1$ ✓

6. $x = 6 - 3y$

$3x + 9y = 18$

$3(6-3y) + 9y = 18$

$18 - 9y + 9y = 18$

$18 = 18$ Same Line

7. $5(2x - 9y = 1)$

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

$10x - 18y = 2$

$-63x + 18y = 72$

$-53x = 74$

$x = -2$

$2(-2) - 9y = 1$

$-4 - 9y = 1$

$-9y = 5$

$y = -\frac{5}{9}$

Ch: $7x - 2y = -8$

$14 + 10 = -8$

8. $5y - 3x = 5$

$x = 2y + 1$

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

$5y - 6y - 3 = 5$

$-y = 8$

$y = -8$

$x = 2y + 1$

$x = -16 + 1$

$x = -15$

Ch: $5y - 3x = 5$

$-40 + 45 = 5$

9. $x - 2y \le 6$

x	y
0	-3
6	0

Solid line

Shade above

$y > -x + 4$

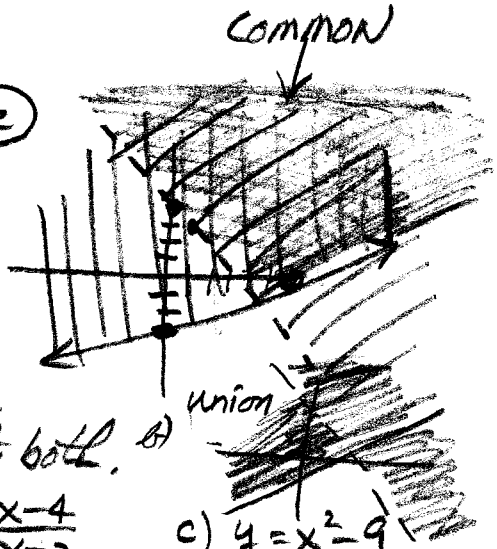
y int $= 4$

$m = -1$

Dotted Line

Shade above

Intersection = common to both.



10. $f(x) = \frac{x-5}{x}$ $\quad g(x) = -2x + 5$

a) $f(-5) = \frac{-5-5}{-5} = 2$

b) $f(0) = \frac{0-5}{0} =$ Undefined

c) $gf(-5) = (-2)(-5) + 5 = 15$

d) $g(\text{Jen}) = -2\,\text{Jen} + 5$

11a) $y = \sqrt{6-x}$

$6 - x \ge 0$

$-x \ge -6$

$x \le 6$

$(-\infty, 6]$

b) $y = \frac{x-4}{x-2}$

all real $x \ne 2$

c) $y = x^2 - 9$

No restrictions

All real x

$(-\infty, \infty)$

d) $y = \frac{x}{x^2 - 7x - 8}$

$(x-8)(x+1)$

All $x \ne 8$ or -1

12.

D: $(-\infty, 0]$

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

F: No

D: all $x \ne \pm 3$

$(-\infty,-3) \cup (-3,3) \cup (3,\infty)$

R: $(-\infty,-2) \cup [1,\infty)$

F: yes