INTERMEDIATE ALGEBRA EXAM 5 A* NAME _____

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

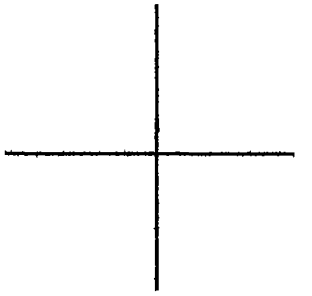
TURN IN ALL WORKSHEETS. CALCULATORS ARE REQUIRED ON THIS TEST.

1. Graph the equations:

a) $Y = -\frac{2}{3}X - 1$

slope = ____

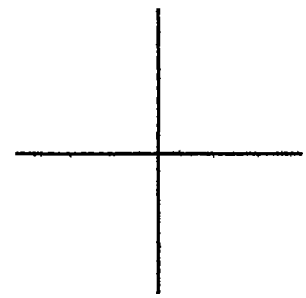
Y-int = ____



b) $3X - 2Y = 10$

X-int = ____

Y-int = ____



2. Given the points (-4, 3) and (2, -1), find:

a) slope

b) distance (nearest hundredth)

c) midpoint

3. Find the slope of a line that

a) is parallel to $2X + 5Y = -10$.

b) is perpendicular to $2X + 5Y = -10$.

4. Find the equation of the line (in slope-intercept form) passing through (-4, 6) with slope $-\frac{4}{3}$.

In 5 - 8, solve the systems of equations

5. $2X + 3Y = -17$
   $-X + 3Y = -5$

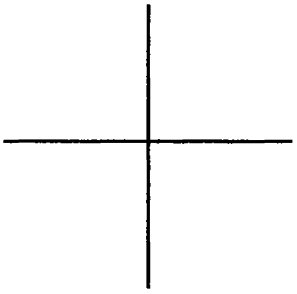
6. $X = 3Y - 2$
   $Y = 4X - 25$

7. $3X + 5Y = 13$
   $7X + 3Y = -13$

8. $-4X + 3Y = 5$
   $20X - 15Y = -25$

9. Graph the <u>intersection</u> of the inequalities: $Y > -3X$

   $2X - 5Y \leq 10$



10. If $f(X) = \dfrac{X - 4}{X + 2}$,

a) f(2) = _____

b) f(4) = _____

c) f(-2) = _____

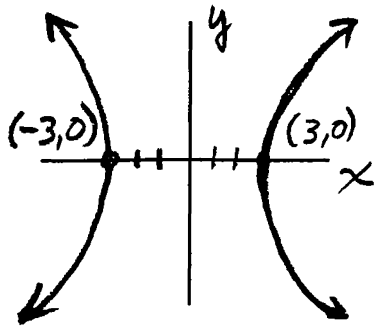
d) f(-6) = _____

11. Given the graph, find:

a) Domain: _____

b) Range: _____

c) Function? _____



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

a) $Y = \sqrt{2X + 10}$

b) $Y = \dfrac{X - 4}{X^2 + 4X - 12}$

c) $Y = X - 4$

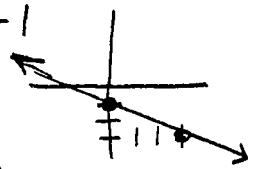
d) $Y = \dfrac{X - 6}{\sqrt{3 - X}}$

EXAM 5A * Solutions

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

$m = -\frac{2}{3}$

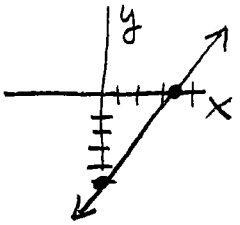
$Yint = -1$



b) $3x - 2y = 10$

xint $(10/3, 0)$

yint $(0, -5)$



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

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

b) $d = \sqrt{6^2+4^2} = \sqrt{36+16} = \sqrt{52} = \boxed{2\sqrt{13}} \approx 7.21$

c) midpt $\left(\frac{-4+2}{2}, \frac{3-1}{2}\right)$ $\boxed{(-1, 1)}$

3. $2x + 5y = -10$

$5y = -2x - 10$

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

a) $\boxed{m = -\frac{2}{5}}$ b) $\boxed{m_\perp = \frac{5}{2}}$

4. $(-4, 6)$ $m = -\frac{4}{3}$

$y = mx + b$

$6 = -\frac{4}{3}(-4) + b$

$3 \cdot 6 = 3 \cdot \frac{16}{3} + 3b$

$18 = 16 + 3b$ $2 = 3b$

$b = 2/3$

$\boxed{y = -\frac{4}{3}x + \frac{2}{3}}$

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

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

$2x + 3y = -17$

$x - 3y = 5$

$3x = -12$

$\boxed{x = -4}$

$2x + 3y = -17$

$-8 + 3y = -17$

$3y = -9$

$\boxed{y = -3}$

Ch: $-x + 3y = -5$

$4 - 9 = -5$ ✓

6. $x = 3y - 2$

$\boxed{y = 4x - 25}$

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

$y = 12y - 8 - 25$

$-11y = -33$

$\boxed{y = 3}$

$x = 3y - 2$

$x = 9 - 2$

$\boxed{x = 7}$

Ch: $y = 4x - 25$

$3 = 28 - 25$ ✓

7. $3(3x + 5y = 13)$

$-5(7x + 3y = -13)$

$9x + 15y = 39$

$-35x - 15y = 65$

$-26x = 104$

$\boxed{x = -4}$

$3x + 5y = 13$

$-12 + 5y = 13$

$5y = 25$

$\boxed{y = 5}$

Ch: $7x + 3y = -13$

$-28 + 15 = -13$ ✓

8. $5(-4x + 3y = 5)$

$20x - 15y = -25$

$-20x + 15y = 25$

$20x - 15y = -25$

$0 = 0$

SAME LINE

$\{(x,y) \mid -4x - 3y = -5\}$

9. $y > -3x$

$y = -3x$

$y$int $= 0$

$m = -3$

Dotted Line

Shade above

CROSS SHADED AREA

$2x - 5y \leq 10$

$2x - 5y = 10$

x	y
0	-2
5	0

Solid line

Shade above.

10. $f(x) = \frac{x-4}{x+2}$

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

b) $f(4) = \frac{4-4}{4+2} = \boxed{0}$

c) $f(-2) = \frac{-2-4}{-2+2} = \boxed{\text{Undefined}}$

d) $f(-6) = \frac{-6-4}{-6+2} = \frac{-10}{-4} = \boxed{\frac{5}{2}}$

11a) $\boxed{D: (-\infty, -3] \cup [3, \infty)}$

b) $\boxed{R: (-\infty, \infty)}$

c) $\boxed{F? \text{ No}}$

12a) $y = \sqrt{2x+10}$

$D: 2x + 10 \geq 0$

$2x \geq -10$

$x \geq -5$

$\boxed{D: [-5, \infty)}$

b) $y = \frac{x-4}{x^2+4x-12}$

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

$x \neq -6$ $x \neq 2$

$\boxed{D: \text{all } x \neq -6, 2}$

c) $y = x - 4$

$\boxed{D: (-\infty, \infty)}$

d) $y = \frac{x-6}{\sqrt{3-x}}$

$D: 3 - x > 0$

$-x > -3$

$x < 3$

$\boxed{D: (-\infty, 3)}$

INTERMEDIATE ALGEBRA EXAM 5 B* NAME_____

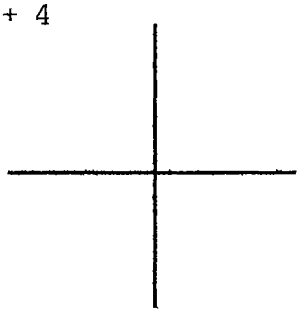
SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers. TURN IN ALL WORKSHEETS. CALCULATORS ARE PERMITTED ON THIS TEST.

1. Graph the equations:

a) $Y = -\frac{3}{2}X + 4$

slope = ____

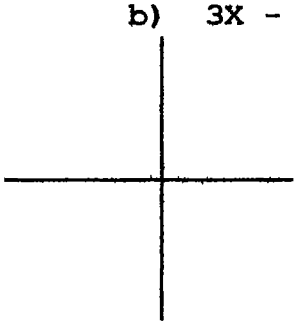
Y-int = ____



b) $3X - 2Y = -10$

X-int = ____

Y-int = ____



2. Given the points (-4, -1) and (6, -3), find:
   a) slope
   b) distance (nearest hundredth)
   c) midpoint

3 Find the slope of a line that
a) is parallel to $2X - 5Y = -10$.

b) is perpendicular to $2X - 5Y = -10$.

4. Find the equation of the line (in slope-intercept form) passing through

(-6, 4) with slope $\frac{3}{4}$.

In 5 - 8, solve the systems of equations:

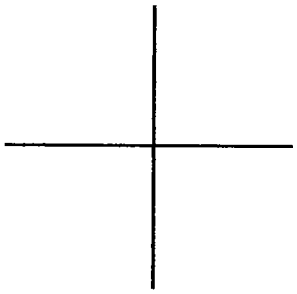
5. $2X - 3Y = 1$
$X + Y = 8$

6. $6Y - 2X = 12$
$X = 3Y + 6$

7. $X = 2Y + 6$
$6Y - 8X = 32$

8. $2X - 3Y = -32$
$3X - 4Y = -36$

9. Graph the <u>union</u> of the inequalities: $Y \geq 3X$
$2X - 5Y > 10$



10. If $f(X) = \frac{X + 4}{X - 2}$

a) f(2) = _____

b) f(4) = _____

c) f(-4) = _____

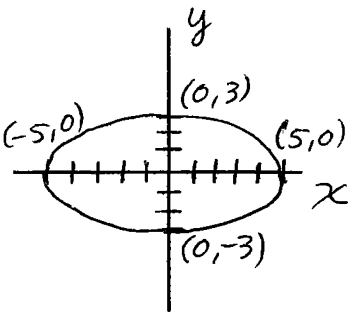
d) f(-6) = _____

11. Given the graph, find:

a) Domain: _____

b) Range: _____

c) Function? ____



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

a) $Y = \frac{X - 4}{X - 2}$

b) $Y = \sqrt{10 - 2X}$

c) $Y = X - 4$

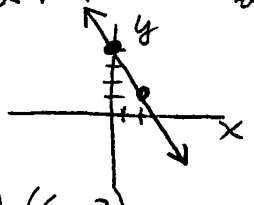
d) $Y = \frac{X - 6}{\sqrt{X - 3}}$

Exam 5B* Solutions.

1a) $y = -\frac{3}{2}x + 4$

$m = -\frac{3}{2}$

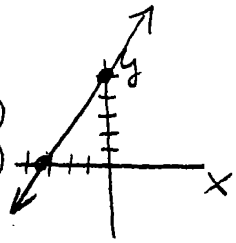
$y\text{int} = 4$



b) $3x - 2y = -10$

$x\text{int} = (-10/3, 0)$

$y\text{int} = (0, 5)$



2. $(-4,7)$ $(6,-3)$

a) $m = \frac{-3-(7)}{6-(-4)} = \frac{-2}{10} = \boxed{-\frac{1}{5}}$

b) $d = \sqrt{10^2 + 2^2} = \sqrt{104} = \boxed{2\sqrt{26} \approx 10.20}$

c) midpt $\left(\frac{-4+6}{2}, \frac{7-3}{2}\right)$ $\boxed{(1,-2)}$

3. $2x - 5y = -10$

$-5y = -2x - 10$

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

a) $m = \frac{2}{5}$ b) $m_{\perp} = -\frac{5}{2}$

4. $(-6,4)$ $m = \frac{3}{4}$

$y = mx + b$

$4 = \frac{3}{4}(-6) + b$

$4 = -\frac{18}{4} + b$

$16 = -18 + 4b$

$34 = 4b$

$b = \frac{17}{2}$

$\boxed{y = \frac{3}{4}x + \frac{17}{2}}$

5. $2x - 3y = 1$

$-2(x + y = 8)$

$2x - 3y = 1$

$-2x - 2y = -16$

$-5y = -15$

$\boxed{y = 3}$

$2x - 3y = 1$

$2x - 9 = 1$

$2x = 10$

$\boxed{x = 5}$

Ch: $x + y = 8$

$5 + 3 = 8$ ✓

6. $6y - 2x = 12$

$x = 3y + 6$

$6y - 2(3y + 6) = 12$

$6y - 6y - 12 = 12$

$-12 = 12$

No Solution
Parallel Lines

7. $x = 2y + 6$

$6y - 8x = 32$

$6y - 8(2y + 6) = 32$

$6y - 16y - 48 = 32$

$-10y = 80$

$\boxed{y = -8}$

$x = 2y + 6$

$x = -16 + 6$

$\boxed{x = -10}$

Ch: $6y - 8x = 32$

$-48 + 80 = 32$ ✓

8. $3(2x - 3y = -32)$

$-2(3x - 4y = -36)$

$6x - 9y = -96$

$-6x + 8y = 72$

$-y = -24$

$\boxed{y = 24}$

$2x - 3y = -32$

$2x - 72 = -32$

$+72 \quad +72$

$2x = 40$

$\boxed{x = 20}$

Ch: $3x - 4y = -36$

$60 - 96 = -36$ ✓

9. $y \geq 3x$

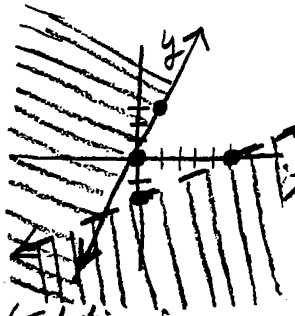
$y = 3x$

$y\text{int} = 0$

$m = 3$

Solid line

Shade below



(Solution is entire shaded area!)

$2x - 5y > 10$

x	y
0	−2
5	0

Dotted Line

Shade below

10. $f(x) = \frac{x+4}{x-2}$

a) $f(2) = \frac{2+4}{2-2} = \boxed{\text{undefined}}$

b) $f(4) = \frac{4+4}{4-2} = \frac{8}{2} = \boxed{4}$

c) $f(-4) = \frac{-4+4}{-4-2} = \boxed{0}$

d) $f(-6) = \frac{-6+4}{-6-2} = \frac{-2}{-8} = \boxed{\frac{1}{4}}$

11a) $\boxed{D = [-5,5]}$

b) $\boxed{R = [-3,3]}$

c) $\boxed{F? \text{ No}}$

12a) $y = \frac{x-4}{x-2}$

$\boxed{D = \text{all } x \neq 2}$

b) $y = \sqrt{10 - 2x}$

$D: 10 - 2x \geq 0$

$-2x \geq -10$

$x \leq 5$

$\boxed{D = (-\infty, 5]}$

c) $y = x - 4$

$\boxed{D = (-\infty, \infty)}$

d) $y = \frac{x-6}{\sqrt{x-3}}$

$D: x - 3 > 0$

$x > 3$

$\boxed{D = (3, \infty)}$

Dr. Robert J. Rapalje