

Reminders:

- **Fraction Workshop** TOMORROW (Tues, 18 Sept) at 3:45 in S203
- **Test #2** WEDNESDAY at 8:00 am
- **Office Hours** for this week:
  - Tuesday 9-10:40, 12:45-1:25
  - Wednesday 3:00-4:40
  - Thursday 3:00-4:00
- **Math Lab** is 7:00-9:00pm every night in S201
- **Homework** (to turn in Wednesday before you take the test)
  - Ch 3 "Chapter Test" in textbook; pp190-191 #1-17
  - Ch 3 "Cumulative Review Exercises" pp 191-192 #1-5; 8-20; 22-24
  - Ch 4 "Chapter Review Exercises" p246 #1-4
  - 4.2 #27, 35

\*Note that answers to Chapter tests, reviews, etc. can be found in the back of your textbook! Please check your answers! HW will be graded for completion, not accuracy, which means showing your work (not just copying answers)

Intermediate Algebra  
Brewer

Test #2

Print Name: \_\_\_\_\_  
03 September 2010

Read each question carefully. You must show all of your work in order to earn full credit. Partial credit will be awarded for legible mathematically-correct progress even when the final answer is not correct. Circle your final answers for 11-25. Print letter answers NEATLY for 1-10 (if I can't read it, you don't get credit).

Part I (1 point each)

\*note that some answer choices will not be used at all, but none will be used more than once

- i 1. multiplicative inverse *1/a*
- a 2. midpoint formula
- g 3. point-slope formula
- m 4. y-intercept
- K 5. vertical line
- L 6. distance formula
- d 7. linear function
- n 8. slope
- b 9. slope-intercept formula
- h 10. horizontal line

~~A.  $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$~~

~~B.  $y = c$~~

~~C.  $\frac{x_2 - x_1}{y_2 - y_1}$~~

~~D.  $f(x) = mx + b$~~

E. 1 *mult. identity*

F.  $-a$  *additive inverse*

~~G.  $y - y_1 = m(x - x_1)$~~

~~H.  $y = mx + b$~~

~~I.  $1/a$~~

J.  $a(b + c) = ab + ac$  *distributive prop.*

~~K.  $x = c$~~

~~L.  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$~~

~~M.  $(0, b)$~~

~~N.  $\frac{y_2 - y_1}{x_2 - x_1}$~~

Part II (6 points each)

11. Solve. Write the solution set in interval notation.  $2x + 4 \geq 5$  and  $1 < 5 - x$

$$2x \geq 1$$

$$x \geq \frac{1}{2}$$

$$\cap$$

$$-4 < -x$$

$$\uparrow > x$$

$$x < 4$$

$$\boxed{\left[\frac{1}{2}, 4\right)}$$



12. Solve for  $x$ .  $2[4 + 2(5 - x) - 2x] = 4x - 7$

$$2[4 + 10 - 2x - 2x] = 4x - 7$$

$$2(14 - 4x) = 4x - 7$$

$$28 - 8x = 4x - 7$$

$$35 = 12x$$

$$\boxed{\frac{35}{12} = x}$$

13. State whether the each of the following relations is a function (yes or no).

- a.  $\{(-3, -1), (-1, -1), (0, 1), (2, 6)\}$  yes
- b.  $\{(0, 0), (1, 0), (2, 0), (3, 0), (4, 0)\}$  yes
- c.  $\{(3, 1), (3, 2), (3, 3), (3, 4)\}$  no
- d.  $\{(1, 3), (3, 5), (5, 7), (7, 9)\}$  yes

14. Evaluate  $H(-3)$ , given that  $H(p) = \frac{3p}{p+2}$ .

$$H(p) = \frac{3p}{p+2}$$

$$H(-3) = \frac{3(-3)}{-3+2} = \frac{-9}{-1} = \boxed{9}$$

$x_1, y_1, x_2, y_2$

15. Find the distance between the points  $P_1(3, -5)$  and  $P_2(6, 0)$ .

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{3^2 + 5^2}$$

$$= \sqrt{(6 - 3)^2 + (0 - (-5))^2} = \sqrt{9 + 25} = \boxed{\sqrt{34}}$$

16. Find the midpoint of the line segment between the points  $P_1(-3, 5)$  and  $P_2(2, -4)$ .

$$\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = \left( \frac{-3 + 2}{2}, \frac{5 + (-4)}{2} \right) = \boxed{\left( -\frac{1}{2}, \frac{1}{2} \right)}$$

17. What values are excluded from the domain of the function?

a.  $g(x) = 3x + 2$  **nothing!**

b.  $G(x) = \frac{2}{x-2}$  **{2}**

c.  $f(x) = \frac{3-5x}{5}$  **nothing**

d.  $H(x) = \frac{3-x}{6-x}$  **{6}**

e.  $f(x) = \frac{(x-5)(x+2)}{(x+1)(x-7)}$   
**{-1, 7}**

f.  $f(x) = \frac{x(x-3)}{x(x+2)(x-4)}$   
**{-2, 4, 0}**

18. State the domain of the function  $F(x) = \frac{x-2}{x+2}$  in interval notation.

exclude: -2



$(-\infty, -2) \cup (-2, \infty)$   
**{x | x ≠ -2}**

$f(x) = \frac{x(x-4)}{(x+1)(x-7)}$

$(-\infty, -1) \cup (-1, 7) \cup (7, \infty)$   
**{x | x ≠ -1, 7}**

19. Find the range of the function  $f(x) = 2 - 3x - x^2$ , where the domain is restricted to the set  $\{-5, 0, 5\}$ .

$$f(-5) = 2 - 3(-5) - (-5)^2 = 2 + 15 - 25 = -8$$

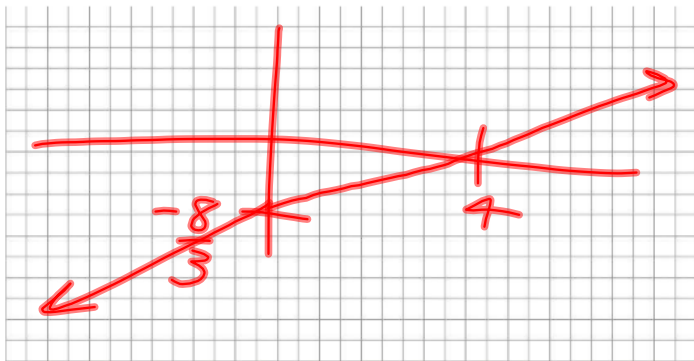
$$f(0) = 2 - 3(0) - 0^2 = 2$$

$$f(5) = 2 - 3(5) - 5^2 = 2 - 15 - 25 = -38$$

range:

$$\{-38, -8, 2\}$$

20. Graph the linear function  $2x - 3y = 8$ . Include labels on axes to indicate your scale.



x-int:

$$2x - 3(0) = 8$$

$$2x = 8 \quad (4, 0)$$

$$x = 4$$

y-int:

$$2(0) - 3y = 8$$

$$-3y = 8 \quad (0, -8/3)$$

$$y = -8/3$$

21. Find the x- and y-intercepts of the function  $3x - 5y = 9$ .

x-intercept:

y-intercept:

$x_1, y_1, x_2, y_2$

22. Find the slope of the line containing the points  $(-2, -5)$  and  $(-4, -1)$ .

$$m = \frac{\Delta y}{\Delta x} = \frac{-1 - (-5)}{-4 - (-2)} = \frac{4}{-2} = \boxed{-2}$$

23. Find the equation of the line that has an undefined slope and passes through the point  $(-5, -1)$ .

$$X = -5$$

24. Find the equation of the line that contains the points  $(2, 1)$  and  $(-2, -3)$ .

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

$$y - y_1 = m(x - x_1)$$

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

$$y = x - 2 + 1$$

$$y = x - 1$$

25. Find the equation of the line that is perpendicular to the line  $2x + 4y = -1$  and passes through the point  $(-1, 3)$ .

$$4y = -2x - 1$$

$$y = -\frac{2}{4}x - \frac{1}{4}$$

$$m = -\frac{1}{2}$$

$$m_{\perp} = 2$$

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

$$y = 2x + 2 + 3$$

$$y = 2x + 5$$

4.2

$$28. \left( \frac{3}{4}x + \frac{1}{3}y = -\frac{1}{2} \right) \cdot 12$$

$$\left( \frac{1}{2}x - \frac{5}{6}y = -\frac{7}{2} \right) \cdot 6$$

$$\Rightarrow \begin{cases} 9x + 4y = -6 \\ (3x - 5y = -21)(-3) \end{cases} \Rightarrow \begin{array}{r} 9x + 4y = -6 \\ -9x + 15y = 63 \\ \hline \end{array}$$

$$9x + 4(3) = -6$$

$$9x + 12 = -6$$

$$9x = -18$$

$$x = -2$$

$$\boxed{(-2, 3)}$$

$$19y = 57$$

$$y = 3$$