HW#3 - Due Tuesday, 09/08:

3.1 - #3-29 odd	ordered pairs, distance, midpoint
3.2 - #3-16 all, 21-43 odd, 49-87 odd	functions, domain, range

HW#4 - Due Friday, 09/11:

3.3 - #3-9 odd, 15-33 odd	graph by plotting points, x- and y-intercepts
3.4 - #3-19 odd, 29-41 odd	finding slope, graph using slope and y-intercept
3.5 - #3-49 odd	finding equations of lines
4.1 - #9,11,13,15,29,37,43,49	solving systems with graphing and substitution
4.2 - #9,13,17,25,27,31,35	solving systems with elimination

Test #2 - MONDAY, 9/14

H 1. slope-intercept formula
N 2. slope
R 3. point-slope formula
O 4. additive inverse
I 5. multiplicative inverse
F 6. distributive property
T 7. associativity
K 8. dependent
L 9. distance formula
Q 10. horizontal line
P 11. inconsistent
U 12. midpoint formula
E 13. conditional
J 14. contradiction
B 15. vertical line
S 16. multiplicative identity

A. ~~$\frac{x_2-x_1}{y_2-y_1}$~~ nothing!

~~B.~~ $x = c$

C. system of equations with only one solution

D. $a + b = b + a$ commutativity (independent)

~~E.~~ equation that is true for only some values of x

~~F.~~ $a(b + c) = ab + ac$

G. 0 additive identity

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

~~I.~~ $1/a$

~~J.~~ equation that is never true

~~K.~~ system of equations with infinitely many solutions

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

M. equation that is always true identity

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

~~O.~~ $-a$

~~P.~~ system of equations with no solution

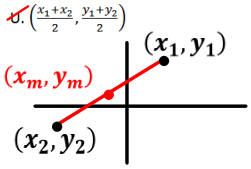
~~Q.~~ $y = c$

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

~~S.~~ 1

~~T.~~ $a + (b + c) = (a + b) + c$

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



17. Solve for x. $4[3+5(3-x)+2x]=2-2x$

$4[3+15-5x+2x]=2-2x$

$4[18-3x]=2-2x$

$72-12x=2-2x$

$70=10x$

$\boxed{x=7}$

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

a. $\{(1,2),(2,3),(3,4),(4,2)\}$

yes

b. $\{(7,5),(7,4),(7,3),(7,2)\}$

no

c. $\{(2,1),(3,1),(4,1),(5,1)\}$

yes

19. Evaluate $F(-3)$, given that $F(x)=x^2+4x-5$.

$F(-3)=(-3)2+4(-3)-5$

$=9-12-5$

$=\boxed{-8}$

note: $(-3,-8)$ is a point on the graph of f

20. Find the distance between the points $P_1(-4,4)$ and $P_2(1,2)$.

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

$$=\sqrt{(1-(-4))^2+(2-4)^2}$$

$$=\sqrt{(5)^2+(-2)^2}=\sqrt{25+4}=\boxed{\sqrt{29}}$$

21. Find the midpoint of the line segment between the points $P_1(3,-7)$ and $P_2(-1,5)$.

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

$$=\left(\frac{3+(-1)}{2},\frac{-7+5}{2}\right)=\left(\frac{2}{2},\frac{-2}{2}\right)=\boxed{(1,-1)}$$

22. What values are excluded from the domain of the function? List your answer(s) using the roster method.

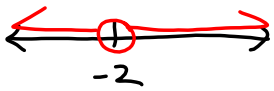
a. $g(x)=\frac{2x+6}{3}$ $\boxed{\emptyset}$ $domain: \mathbb{R} = (-\infty, \infty)$

b. $G(x)=\frac{1}{4-x}$ $\boxed{\{4\}}$ $domain: \{x|x \neq 4\} = (-\infty, 4) \cup (4, \infty)$

c. $f(x)=\frac{x-5}{x+9}$ $\boxed{\{-9\}}$ $domain: \{x|x \neq -9\} = (-\infty, -9) \cup (-9, \infty)$

23. State the domain of the function $f(x)=\frac{x-1}{x+2}$ in interval notation.

$\boxed{(-\infty, -2) \cup (-2, \infty)}$



24. Find the range of the function $f(x)=\frac{5}{1-x}$, where the domain is restricted to the set {-2,0,2}. List your answers using the roster method. range=output of domain

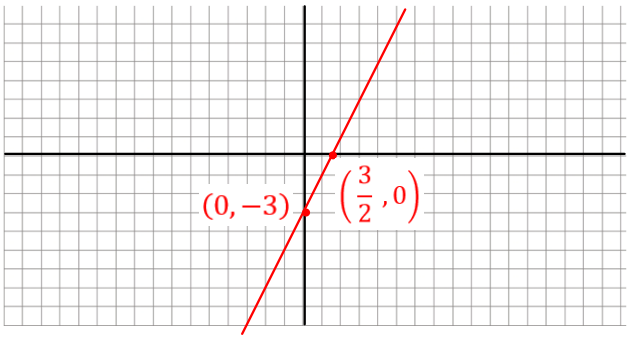
$$f(-2)=\frac{5}{1-(-2)}=\frac{5}{3}$$

$$f(0)=\frac{5}{1-0}=5$$

$$f(2)=\frac{5}{1-2}=\frac{5}{-1}=-5$$

$\boxed{\left\{-5, \frac{5}{3}, 5\right\}}$

25. Graph the linear function $2x - y = 3$. Include labels on axes to indicate your scale, and label with an ordered pair (x, y) the coordinates of each of the points you used to draw your line.



Note: any two points will work to graph a line;
x- and y-intercepts are two easy points to plot

-y=-2x+3

y=2x-3

slope: 2

x-intercept:

2x-0=3

x=3/2

y-intercept:

2(0)-y=3

y=-3

26. Find the x- and y-intercepts of the function $3x + 4y = -8$.

x-intercept: (x, 0) $3x+4(0)=-8$, $x=-8/3$ $\boxed{\left(-\frac{8}{3}, 0\right)}$

y-intercept: (0, y) $0x+4y=-8$, $y=-2$ $\boxed{(0, -2)}$

27. Find the slope of the line containing the points $(-2,5)$ and $(3, -1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5-(-1)}{-2-3} = \frac{6}{-5} = \boxed{-\frac{6}{5}}$$

28. Find the equation of the line that has slope 0 and passes through the point $(-4, 7)$.

$\boxed{y = 7}$

note:
vertical lines have undefined slope and are of the form x=a
horizontal lines have slope 0 and are of the form y=b

29. Find the equation of the line that is parallel to the line $2x - 3y = 2$ and passes through the point $(6, -4)$.

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

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

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

$\boxed{y = \frac{2}{3}x - 8}$

$-3y = -2x + 2$

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

$m = \frac{2}{3}$ $(x_1, y_1) = (6, -4)$

Note: if we were asked to find a perpendicular line, we would have used m=-3/2

30. Solve the system of equations. If it exists, give your solution as an ordered pair (x, y).

$\begin{cases} 3x + 2y = 5 & (3) \\ 2x - 3y = -14 & (2) \end{cases}$

$9x+6y=15$

$+\ 4x-6y=-28$

$13x=-13$

$X=-1$

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

$-3+2y=5$

$2y=8$

$y=4$

$\boxed{(-1,4)}$

Check:
$3(-1)+2(4)=-3+8=5$ ✓
$2(-1)-3(4)=-2-12=-14$ ✓

Note: if addition yields a contradiction, the system is inconsistent (parallel lines) and there is no solution.

if addition yields an identity, the system is dependent and the solution is all (infinitely many) ordered pairs of the form (x, mx+b)