GSE Algebra I
Name: Key

Unit 2 Test Review
Date: _____

Unit 2 Test Review

1. Given the following chart, if we add the given points to it, will it remain a function? Say why or why not for each point.

x	-2	0	5	8	13
y	6	-4	9	12	-3

a) (3,9) Yes, 3 isn't a repeated x.

b) (8,7) No. 8 is already there with 12 as y.

c) (13,–3) Yes. This point is already completely in the chart.

2. Solve the given systems by the requested methods:

a) Elimination: $16x+7y=5$, $8x-3y=-17$

$16x+7y=5$
$16x-6y=-34$
$13y=39$
$y=3$

$16x+7(3)=5$
$16x+21=5$
$16x=-16$
$x=-1$

$(-1,3)$

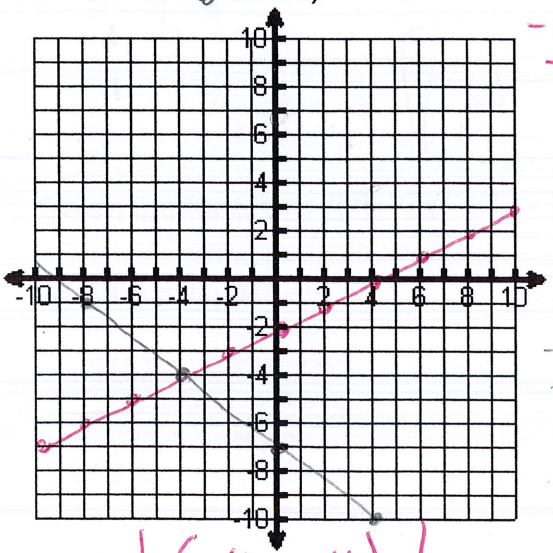
b) Substitution: $3x-y=10$, $y=4x-11$

$3x-(4x-11)=10$
$3x-4x+11=10$
$-x+11=10$
$-x=-1$
$x=1$

$y=4(1)-11$
$y=4-11$
$y=-7$

$(1,-7)$

c) Graphing: $x-2y=4$, $3x+4y=-28$

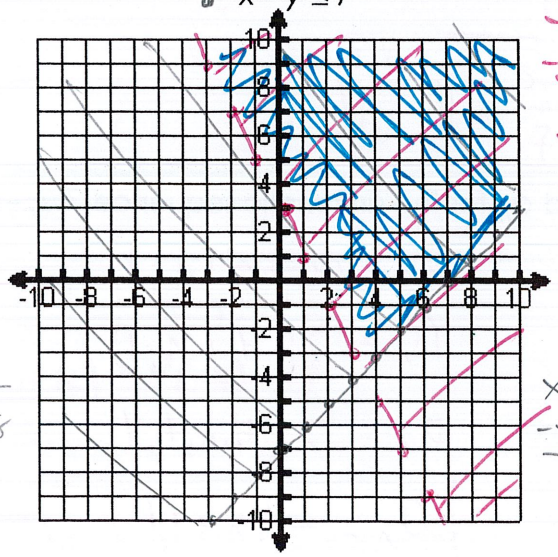


$x-2y=4$
$-x \quad -x$
$-2y=-x+4$
$-2 \quad -2 \quad -2$
$y=\frac{1}{2}x-2$

$3x+4y=-28$
$-3x \quad -3x$
$\frac{4y}{4}=\frac{-3x-28}{4}$
$y=-\frac{3}{4}x-7$

$(-4,-4)$

d) Inequalities: $2x+y>3$, $x-y\leq 7$



$2x+y>3$
$-2x \quad -2x$
$y>-2x+3$
$0>-2(0)+3$
$0>3$
False

$x-y\leq 7$
$-x \quad -x$
$-y\leq -x+7$
$y\geq x-7$
$0\geq 0-7$
$0\geq -7$
True

3. Is (5,9) a solution to $12-4x \geq 24$? Why or why not?

$12-4(5) \geq 24$

$12-20 \geq 24$

$-8 \geq 24$

No. It results as a false statement when you plug it in.

4. Zion is buying decorations for Homecoming. Balloons cost $7 a pack and streamers are $12 a pack. If the decorating budget has $250, write an **inequality** for the cost of balloon and streamers that they can buy

b = # of balloons bought

s = # of streamers bought

$7b+12s=25$

$7b+12s \leq 250$

5. You are on a farm that raises cows and chickens. If there are 20 animals total, and the animals have 56 legs in total (assume a standard number of legs for the animals), how many cows and how many chickens are there?

m = # of cows

c = # of chickens

$4m+2c=56 \Rightarrow 4m+2c=56$

$2(m+c=20)2 \ominus 2m+2c=40$

$2m=16$

$m=8$

$m+c=20$

$8+c=20$

$c=12$

There are 8 cows and 12 chickens

6. Solve the following equations for the requested variables:

a) $r=fh+c;\ h$

$-c \quad -c$

$r-c=fh$

$\frac{r-c}{f}=\frac{fh}{f}$

$\frac{r-c}{f}=h$

b) $P=2(L+W);\ L$

$\frac{P}{2}=\frac{2(L+W)}{2}$

$\frac{P}{2}=L+W$

$-W \quad -W$

$\frac{P}{2}-W=L$

7. Find a_n for the arithmetic sequence 7,3,−1,...

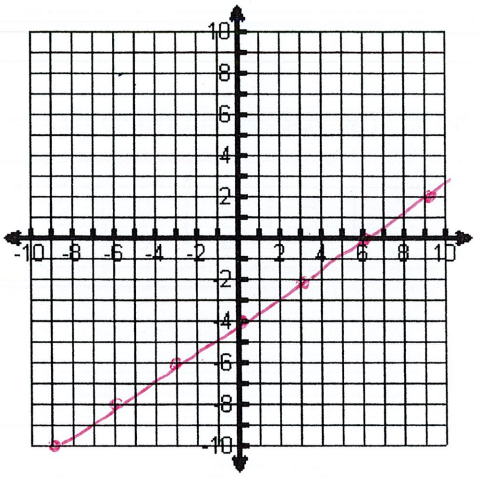
$a_n=a_1+d(n-1)$

$a_n=7-4(n-1)$

$a_n=7-4n+4$

$a_n=-4n+11$

8. $f(x)=\frac{2}{3}x-4$



a. Domain: $(-\infty, \infty)$ b. Range: $(-\infty, \infty)$

c. Increasing or decreasing? Increasing

d. x-intercept: $(6,0)$ e. y-intercept: $(0,-4)$

e. End Behavior:

$x \to -\infty$ $f(x) \to -\infty$

$x \to \infty$ $f(x) \to \infty$

f. Rate of change from $[-3,6]$ $\frac{0-(-6)}{6-(-3)} = \frac{6}{9} = \frac{2}{3}$

↑ Hey, that's the slope!

9. What is the 10th term in an arithmetic sequence whose third term is 17 and whose common difference is 8?

3, 11, 17 (−8, −8)

$d=8$

$a_1=3$

$a_n = a_1 + d(n-1)$

$a_{10} = 3+8(10-1)$

$a_{10} = 3+8(9)$

$a_{10} = 3+72$

$a_{10} = 75$

10. Convert the following sequences between explicit and recursive:

a) $a_n = 7n-11$

$d=7$

$a_1 = 7(1)-11 = 4$

$a_n = a_{n-1} + 7;\ a_1 = 4$

b) $a_n = a_{n-1} - 4; a_1 = 6$

$d=-4$

$a_1 = 6$

$a_n = a_1 + d(n-1)$

$a_n = 6-4(n-1)$

$a_n = 6-4n+4$

$a_n = -4n+10$

11. Given the functions $f(x)=3x^2-4x+19$ and $g(x)=6x+35$

a) $g(8) = 6(8)+35$

$g(8) = 48+35$

$g(8) = 83$

b) $f(-4) = 3(-4)^2-4(-4)+19$

$F(-4) = 3(16)-4(-4)+19$

$F(-4) = 48+16+19$

$F(-4) = 83$