CP Algebra 2
Unit 1 Review

Name: key
Date: _____ Block: _____

Solve each equation.

1. $3(x+2)+2(x-4)+1=-26$

$3x+6+2x-8+1=-26$

$5x-1=-26$

$5x=-25$

$x=-5$

2. $3(2x-1)=5(x+2)-2$

$6x-3=5x+10-2$

$x=11$

3. $2(3x+5)=2x+9$

$6x+10=2x+9$

$4x=-1$

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

4. $6(x+2)-2(x-1)=17$

$6x+12-2x+2=17$

$4x+14=17$

$4x=3$

$x=\frac{3}{4}$

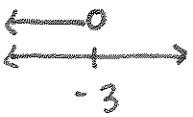
Solve each inequality.
Graph your answer and write your answer in interval notation.

5. $30-6x<-3(5+7x)$

$30-6x<-15-21x$

$15x<-45$

$x<-3$



$(-\infty,-3)$

6. $33+4x\leq-(x+7)$

$33+4x\leq-x-7$

$5x\leq-40$

$x\leq-8$

$(-\infty,-8]$

7. $2(6+4x)\geq12-8x$

$12+8x\geq12-8x$

$16x\geq0$

$x\geq0$

$[0,\infty)$

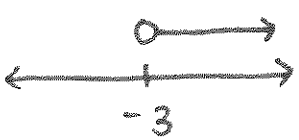
8. $-5(2x+7)+x<-x-11$

$-10x-35+x<-x-11$

$-9x-35<-x-11$

$-8x<24$

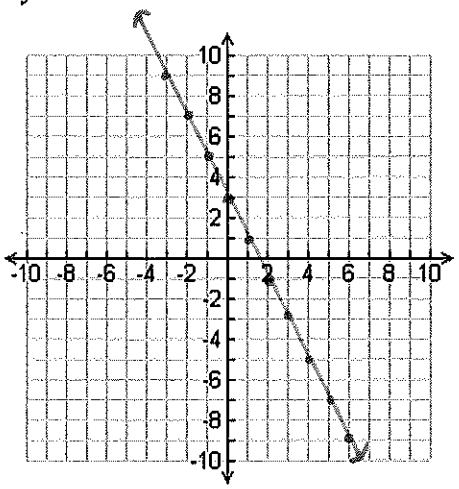
$x>-3$



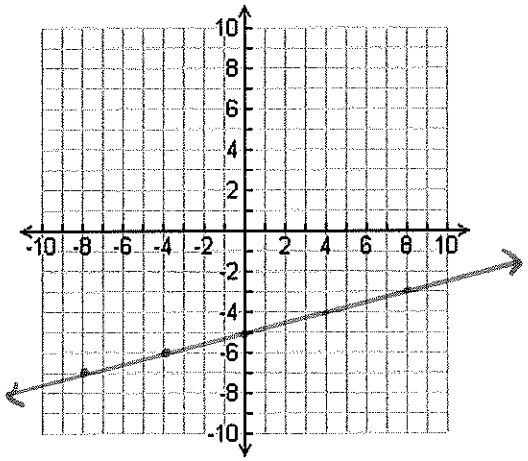
$(-3,\infty)$

Graph each linear equation or linear inequality.

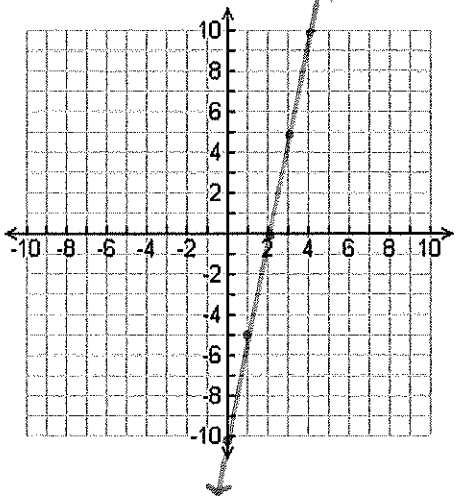
9. $y = -2x + 3$



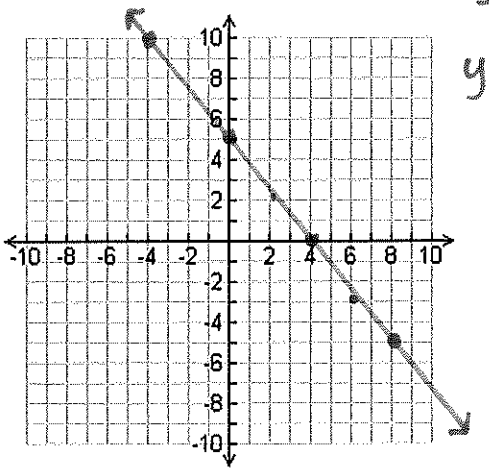
10. $y = \frac{1}{4}x - 5$



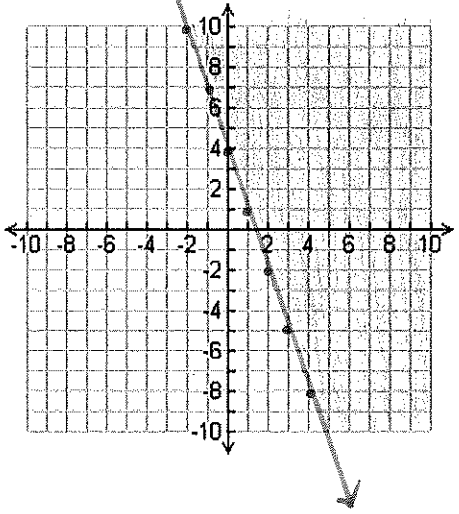
11. $5x - y = 10$ $y = 5x - 10$



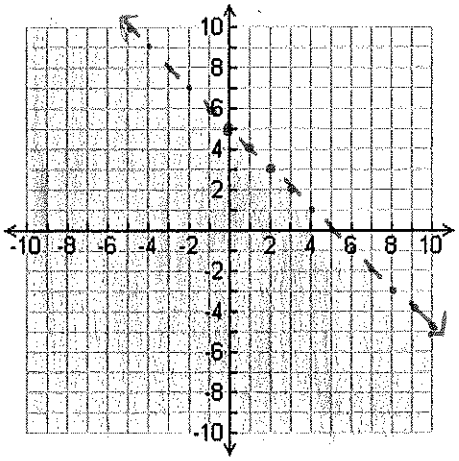
12. $5x + 4y = 20$ $x = 4$ $y = 5$ $y = -\frac{5}{4}x + 5$



13. $y \geq -3x + 4$ solid

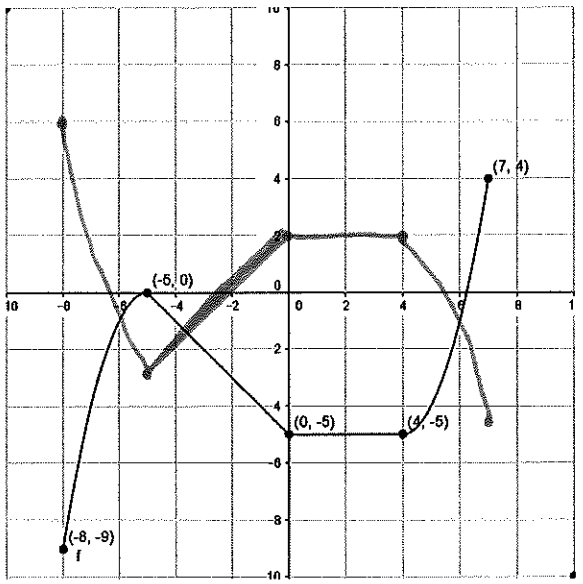


14. $2x + 2y < 10$ $y < -x + 5$ dashed



Use a table to perform each transformation of $y = f(x)$.
Graph your answers on the same coordinate plane as the original function.

15. Reflect over the x-axis, down 3

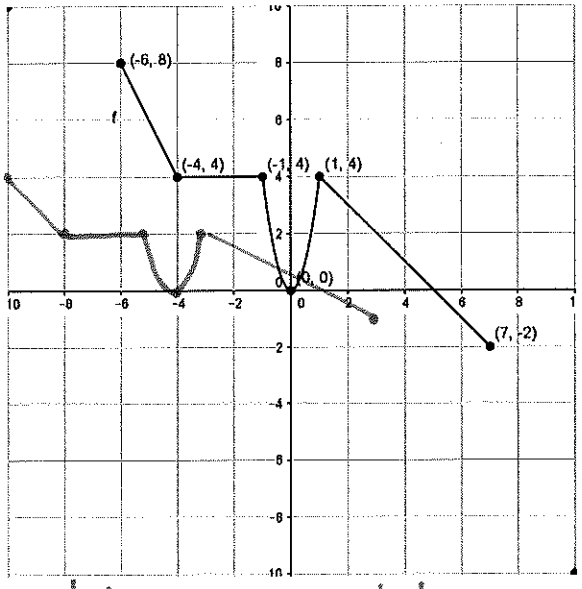


x	y
-8	-9
-5	0
0	-5
4	-5
7	4

∴

x	-y-3
-8	6
-5	-3
0	2
4	2
7	-7

16. Vertical shrink by ½, left 4

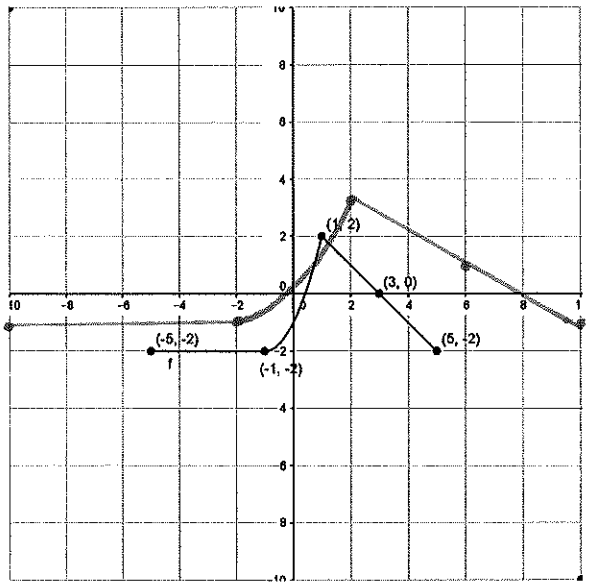


x	y
-6	8
-4	4
-1	4
0	0
1	4
7	-2

∴

x-4	½y
-10	4
-8	2
-5	2
-4	0
-3	2
3	-1

17. Horizontal stretch by 2, up 1

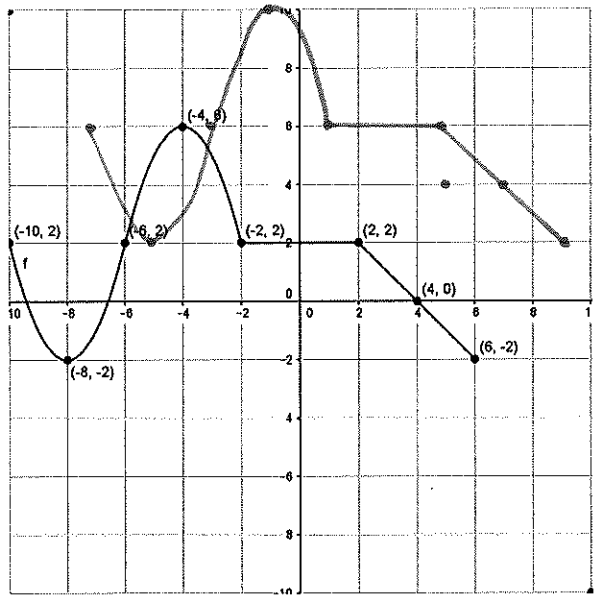


x	y
-5	-2
-1	-2
1	2
3	0
5	-2

∴

2x	y+1
-10	-1
-2	-1
2	3
6	1
10	-1

18. Up 4 and right 3



x	y
-10	2
-8	-2
-6	2
-4	6

x	y
-2	2
2	2
4	0
6	-2

∴

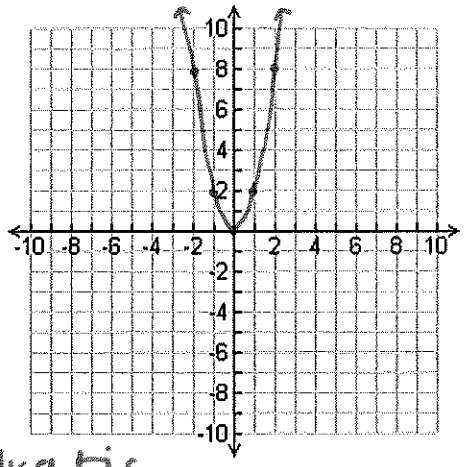
x+3	y+4
-7	6
-5	2
-3	6
-1	10

1	6
5	6
7	4
9	2

Graph the data. Determine the parent function, domain and range.

19.

x	-2	-1	0	1	2
y	8	2	0	2	8



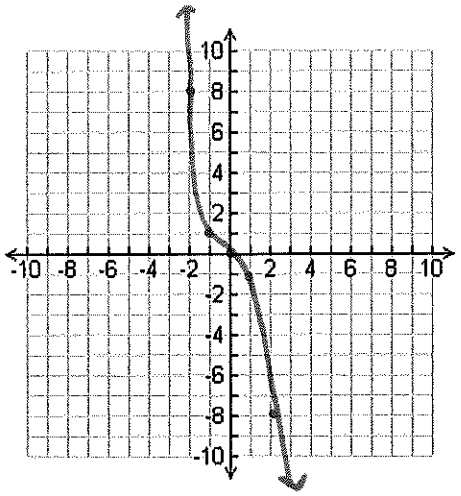
quadratic

D: $\mathbb{R}$

R: $[0, \infty)$

20.

x	-2	-1	0	1	2
y	8	1	0	-1	-8



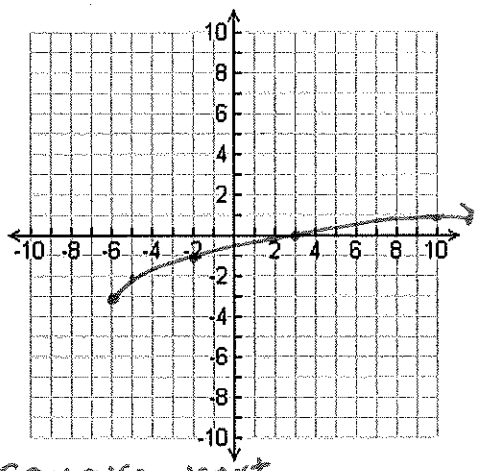
cubic

D: $\mathbb{R}$

R: $\mathbb{R}$

21.

x	-6	-5	-2	3	10
y	-3	-2	-1	0	1



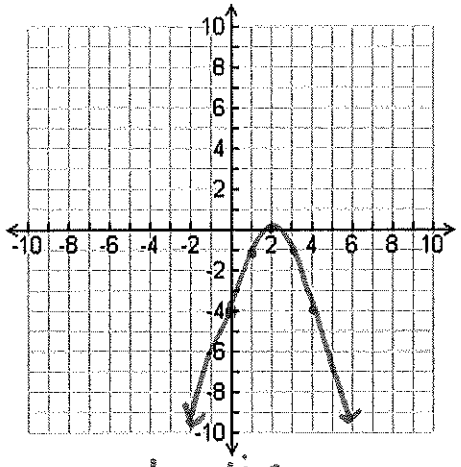
square root

D: $[-6, \infty)$

R: $[-3, \infty)$

22.

x	0	1	2	3	4
y	-4	-1	0	-1	-4



quadratic

D: $\mathbb{R}$

R: $(-\infty, 0]$

Graph the following on your graphing calculator.
Determine the parent function, domain and range.

23. $g(x) = \sqrt{-x+1}$

square root
D: $(-\infty, 1]$
R: $[0, \infty)$

24. $g(x) = -\left(\frac{1}{2}x\right)^2$

quadratic
D: $\mathbb{R}$
R: $(-\infty, 0]$

25. $g(x) = (x-2)^3 - 3$

cubic
D: $\mathbb{R}$ R: $\mathbb{R}$

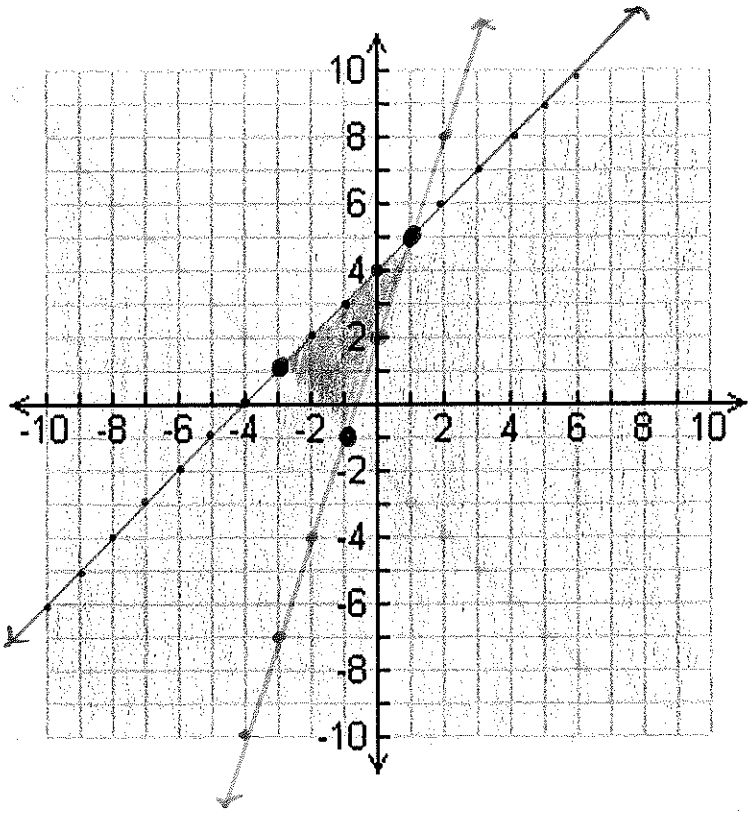
26. $g(x) = (x+4)^2 - 6$

quadratic
D: $\mathbb{R}$ R: $[-6, \infty)$

Graph the system of inequalities. Name the points of interest and determine which points maximize and minimize the objective function.

27.

$y \geq -x - 2$
$y \geq 3x + 2$
$y \leq x + 4$
$f(x,y) = -3x + 5y$



(-3, 1) = 14
(-1, -1) = -2 min
(1, 5) = 22 max

28. A clothing company makes jackets and pants. Each jacket requires 1 hour of cutting and 4 hours of sewing. Each pair of pants requires 2 hours of cutting and 2 hours of sewing. The total time per day available for cutting is 10 hours and for sewing is 32 hours. If the profit on a jacket is $14 and on a pair of pants is $8, determine the number each that should made each day to maximize profit. What is the maximum profit?

x - jackets
y - pants

$x + 2y \leq 10$
$4x + 2y \leq 32$
$x \geq 0$
$y \geq 0$

$y \leq -1/2x + 5$
$y \leq -2x + 8$

(2, 4)

2 jackets,
4 pairs of pants
$60

$f(x,y) = 14x + 8y$