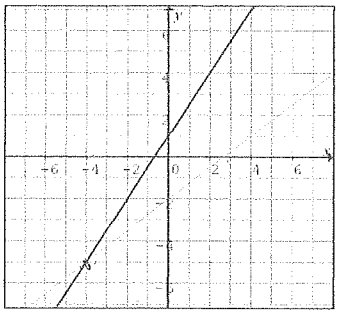
Pre-Calculus 11 KEY **Chapter 8 Review**

Name: KEY

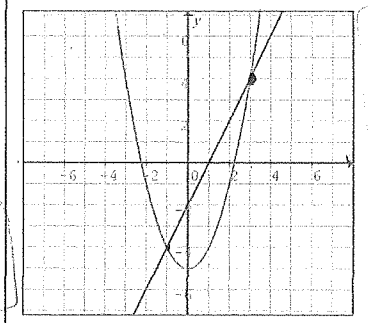
1. Solve the following by graphing.

a) $3x-4y=8$
$2y-3x=2$



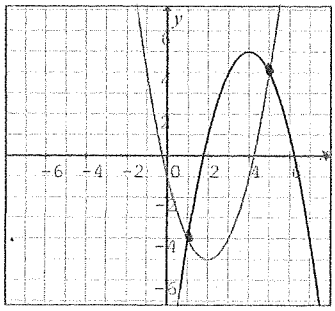
$\{(-4,-7)\}$

b) $y-x^2=-5$
$y-2x=-2$



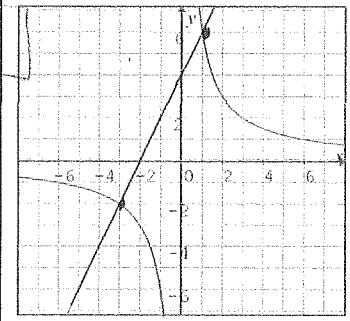
$\{(3,4),(-1,-4)\}$

c) $y+5=(x-2)^2$
$y-5=-(x-4)^2$



$\{(5,4),(1,-4)\}$

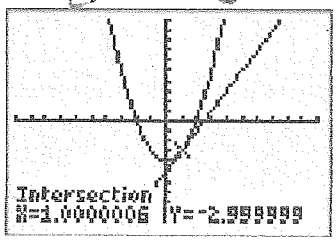
d) $xy=6$
$y-2x=4$



$\{(1,6),(-3,-2)\}$

2. Solve by ~~using the graphing calculator~~. elimination

a) $y=x^2-4$
$y=2x-5$] M(1)



$y=x^2-4$
$-y=-2x+5$

$0=x^2-2x+1$

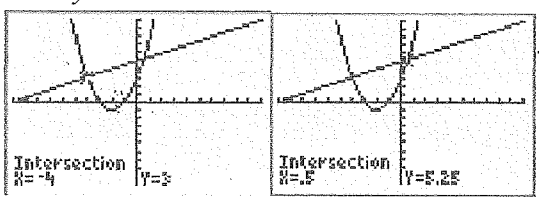
$(x-1)(x-1)=0$

$x=1$

$y=1^2-4=-3$

$\{(1,-3)\}$

b) $y=x^2+4x+3$] M (-2)
$2y=x+10$



$-2y=-2x^2-8x-6$
$2y=x+10$

$0=-2x^2-7x+4$

$1 \times -8 = -8$
$1+-8=-7$

$-2x$	-8
1	4

$(-2x+1)(x+4)=0$

$-2x=1$ or $x=-4$

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

$\{(1/2, 5.25),(-4,3)\}$

Name: Jacob Rescello

Student Achievement Rubric

Term: 2

WORK HABITS

	Good (G)	Satisfactory (S)	Needs Improvement (N)
RESPONSIBILITY			
Attendance	Always attends	Usually attends class	Frequently absent
Punctuality	Always on time	Usually on Time	Frequently late
Prepared materials	Always prepared for class (ex. has pencil, paper)	Usually prepared for class	Unprepared for class
Task Completion	Work is complete	Work is usually complete	Work often incomplete
Integrity	Does own work; does not abuse break privileges	Sometimes copies and/or abuses bathroom/water breaks	Often copies and/or abuses bathroom/water breaks
COOPERATION			
Participation	Always participates/or makes a positive contribution to the class	Usually participates and/or makes a positive contribution in class	Seldom participates and rarely contributes to class
Follows Instructions	Listens and follows teacher instructions	Usually listens and follows teacher instructions	Rarely listens and follows teacher instructions
Respects Diversity	Interacts with all members of the class in a positive manner	Usually interacts with most members of the class in a positive way	May avoid working with others. Often disrupts others' learning
INDEPENDENCE			
Focus	Works without direct supervision; on task	Usually works without direct supervision; on task	Seldom works without direct supervision
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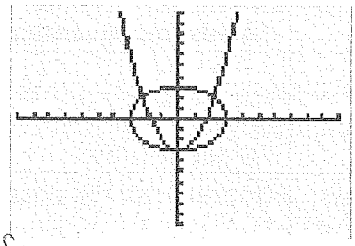
Two Stars and a Wish: (Two things you are proud of this term and one thing to Improve)

Star:
Star:
Wish:

c) $x^2+y^2=9$

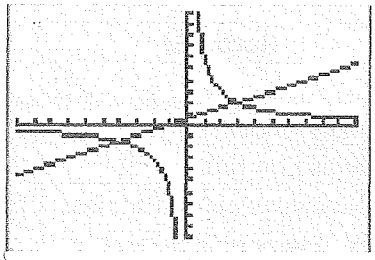
$y=x^2-3$



$\{(-2.34,2),(0,-3),\text{or }(2.34,2)\}$

d) $x-2y+1=0$

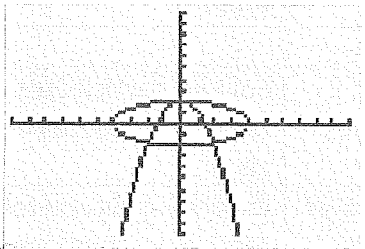
$xy=6$



$\{(-4,-1.5)\text{ or }(3,2)\}$

e) $x^2+4y^2=16$

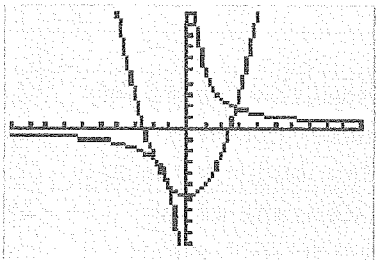
$y=2-x^2$



$\{(-1.94,-1.75),(0,2),\text{or }(1.94,-1.75)\}$

f) $y=x^2-6$

$xy=5$



$(-1.79,-2.79),(-1,-5),\text{or }(2.79,1.79)$

3. Solve algebraically.

a) $2x-y=3$, $3y+2x=15$ $\rightarrow$ $2x-3=y$, $3y+2x=15$

$3(2x-3)+2x=15$ Substitution

$6x-9+2x=15$

$8x=24$

$x=3$

$2(3)-3=y$

$3=y$

$\{(3,3)\}$

b) $x-2y=12$, $2y+3x=8$ $\rightarrow$ $x=2y+12$, $2y+3x=8$

$2y+3(2y+12)=8$

$2y+6y+36=8$

$8y=-28$

$y=-3.5$

$x=2(-3.5)+12$

$x=5$

$\{(-3.5,5)\}$

c) $y=x^2+6x+5$, $3y+x=-15$ $\rightarrow$ $y=x^2+6x+5$, $x=-3y-15$

$y=(-3y-15)^2+6(-3y-15)+5$

$y=9y^2+90y+225-18y-90+5$

$0=9y^2+71y+140$

$0=(9y+35)(y+4)$

$x=-3\left(-\frac{35}{9}\right)-15$

$x=\frac{35}{3}-\frac{45}{3}=-\frac{10}{3}$

d) $xy=-4$, $3x-2y=-10$ $\rightarrow$ $xy=-4$, $y=-\frac{3}{2}x+5$

$x\left(-\frac{3}{2}x+5\right)=-4$

$-\frac{3}{2}x^2+5x=-4$

$3x^2-10x-8=0$

$y=\left(-\frac{3}{2}\right)\left(\frac{4}{3}\right)+5$

$y=-2+5=3$

Continued on next page ....

Name: Ajala

Student Achievement Rubric

Term: 3

WORK HABITS

	Good (G)	Satisfactory (S)	Needs Improvement (N)
RESPONSIBILITY			
Attendance	Always attends ✓	Usually attends class	Frequently absent
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Two Stars and a Wish: (Two things you are proud of this term and one thing to Improve)

Star:	That i hand in all my work on or days before the due date.
Star:	if the teacher explains something i don't get, i ask for jenny to explain it to me.
Wish:	to raise my hand more often.

$y=-\frac{35}{9}$ *or* $y=-4$ $\quad x=-3(-4)-15$

$x=12-15=-3$

Solutions: $\left\{\left(-\frac{10}{3},-\frac{35}{3}\right) \text{ or } (-3,4)\right\}$

$(3x-4)(x+2)=0$ $\quad y=\left(-\frac{3}{2}\right)(-2)+5$

$x=\frac{4}{3}$ *or* $x=-2$ $\quad y=3+5=8$

Solutions: $\left\{\left(\frac{4}{3},3\right) \text{ or } (-2,8)\right\}$

e) $\begin{aligned} x^2+y^2&=13 \\ 2x+3y&=13 \end{aligned} \rightarrow \begin{aligned} x^2+y^2&=13 \\ x&=\frac{13-3y}{2} \end{aligned}$

$\left(\frac{13-3y}{2}\right)^2+y^2=13$

$\frac{1}{4}\left(169-78y+9y^2\right)+y^2=13$

$9y^2-78y+169+4y^2=4\times 13$

$13y^2-78y+117=0$

$13\left(y^2-6y+9\right)=0$ $\quad x=\frac{13-3(3)}{2}$

$13(y-3)^2=0$ $\quad x=2$

$y=3$

f) $\begin{aligned} 4x^2+y^2&=16 \\ y&=x^2-4 \end{aligned}$

$4x^2+\left(x^2-4\right)^2=16$ $\quad y=(0)^2-4$

$4x^2+x^4-8x^2+16=16$ $\quad y=-4$

$x^4-4x^2=0$

$x^2\left(x^2-4\right)=0$ $\quad y=(\pm 2)^2-4$

$x^2(x+2)(x-2)=0$ $\quad y=0$

$x=0, x=-2,$ *or* $x=2$

Solution: $\{(0,-4),(-2,0),$ *or* $(2,0)\}$

g) $\begin{aligned} x^2+y^2-6y&=1 \\ xy&=-6 \end{aligned} \rightarrow \begin{aligned} x^2+y^2-6y&=1 \\ x&=\frac{-6}{y} \end{aligned}$

$\left(\frac{-6}{y}\right)^2+y^2-6y=1$

$\frac{36}{y^2}+y^2-6y=1$ $\quad x=\frac{-6}{6}=-1$

$36+y^4-6y^3=y^2$

$y^4-6y^3+36-y^2=0$ $\quad x=\frac{-6}{2}=-3$

$-y^3(6-y)+(6+y)(6-y)=0$

$(6-y)\left[-y^3+(6+y)\right]=0$

$(6-y)\left(-y^3+y+6\right)=0$

$-(6-y)(y-2)\left(y^2+2y+3\right)=0$

$y=6$ *or* $y=2$ $\quad$ Solution: $(-1,6)$ *or* $(-3,2)$

h) $\begin{aligned} y^2&=-27x \\ x^2&=8y \end{aligned}$

$\left(\frac{x^2}{8}\right)^2=-27x$ $\quad (0)^2=8y$

$\frac{x^4}{64}=-27x$ $\quad 0=y$

$x^4+1728x=0$

$x\left(x^3+1728\right)=0$

$x(x+12)\left(x^2-12x+144\right)=0$

$x=0$ *or* $x=-12$ $\quad (-12)^2=8y$

$18=y$

Solution: $(0,0)$ *or* $(-12,18)$

Name: Daniel Mages

Student Achievement Rubric

Term: 1

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Proud of:

Star:
Star:
Wish:

Goal

4. Three footballs and one soccer ball cost $155. Two footballs and three soccer balls cost $220. Determine the cost of one football and the cost of one soccer ball.

Let F be the cost of a football

And C be the cost of a soccer ball

$$\begin{aligned} 3F+1C&=155\\ 2F+3C&=220 \end{aligned} \qquad \rightarrow C=155-3F$$

$$\begin{aligned} &2F+3(155-3F)=220 && \text{Substitute}\\ &2F+465-9F=220 && C=155-3(35)\\ &-7F=-245 && C=\$50\\ &F=\$35 \end{aligned}$$

The cost of a football is $35 and $50 for a soccer ball.

5. For the athletic banquet, one adult ticket cost $15.00 and one student ticket costs $10.00. One hundred forty tickets were sold. The total receipts were $1600. How many student tickets were sold?

Let A be the number of adult tickets

And T be the number of student tickets

$$\begin{aligned} A+T&=140\\ 15A+10T&=1600 \end{aligned} \qquad \rightarrow T=140-A$$

$$\begin{aligned} &15A+10(140-A)=1600 && \text{Substitute}\\ &15A+1400-10A=1600 && T=140-40\\ &5A=200 && T=100\\ &A=40 \end{aligned}$$

100 student tickets were sold to the athletic banquet.

6. A crate of 36 grapefruit has a total mass of 4 kg. When 12 grapefruit are removed, the total mass is 3 kg. Determine the mass of the crate and the mass of one grapefruit.

Let C be the mass of the crate

And G be the mass of the grapefruit.

5. $1\frac{1}{3} \times 2\frac{1}{5} =$

.

6. $3\frac{4}{5} \times 2\frac{1}{2} ==$

.

7. DIVIDE. Express your answer in SIMPLIFIED terms.

a) $\frac{6}{11} \div 3 =$

b) $\frac{15}{16} \div 5 =$

c) $6 \div \frac{18}{7} =$

d) $4 \div \frac{12}{15} =$

.

8. $4\frac{1}{2} \div 1\frac{1}{6} =$

.

9. $5\frac{1}{4} \div 4\frac{1}{2} =$

$$\begin{aligned} C+36G&=4 \\ C+24G&=3 \end{aligned} \rightarrow \begin{aligned} C&=4-36G \\ C&=3-24G \end{aligned}$$

$$\begin{aligned} 4-36G&=3-24G \\ 1&=12G \\ \frac{1}{12}&=G \end{aligned} \qquad \begin{aligned} C&=3-24\left(\frac{1}{12}\right) \\ C&=1 \end{aligned}$$

The crate's mass is 1 kg and each grapefruit is 83⅓ g.

7. Jennifer invested $500, part at 7% per annum and the rest at 10% per annum. After one year, the total interest earned was $44. How much did Jennifer invest at each rate?

Let A be the amount invested at 7%
And B be the amount invested at 10%

$$\begin{aligned} A+B&=500 \\ 0.07A+0.1B&=44 \end{aligned} \rightarrow B=500-A$$

$$\begin{aligned} 0.07A+0.1(500-A)&=44 \\ 0.07A+50-0.1A&=44 \\ -0.03A&=-6 \\ A&=\$200 \end{aligned} \qquad \begin{aligned} B&=500-200 \\ B&=\$300 \end{aligned}$$

Jennifer invested $200 at 7% and $300 at 10%.

Pre-Calculus 11 KEY **Chapter 9 Review** **Period:** _____

Name: _____ Date: _____

1. Solve the following inequalities. in 1 variable.

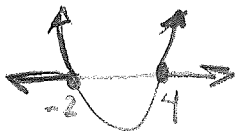
a) $x^2 - 2x - 8 \geq 0$

$x^2 - 2x - 8 = 0$

$(x+2)(x-4) = 0$

$x = -2$ *or* $x = 4$ (Roots)

Solution : $x \leq -2$ *or* $x \geq 4$



15 ≥ 0 TRUE

b) $x(x-5) < 14$

$x^2 - 5x - 14 = 0$

$(x+2)(x-7) = 0$

$x = -2$ *or* $x = 7$

Solution : $-2 < x < 7$

Test -10: -10(-10-5) < 14 → 150 < 14 false

Test 0: 0(0-5) < 14 → 0 < 14 TRUE

Test 10: 10(10-5) < 14 → 10(5) ≤ 14 → 50 ≤ 14 false

c) $15 - x^2 \geq 2x$

$x^2 + 2x - 15 \leq 0$

$x^2 + 2x - 15 = 0$

$(x+5)(x-3) = 0$

$x = -5$ *or* $x = 3$

Solution : $-5 \leq x \leq 3$

d) $-2x - 2x^2 > 15 - 15x$

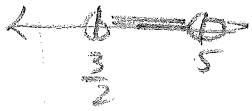
$-2x^2 + 13x - 15 > 0$

$2x^2 - 13x + 15 < 0$

$(2x-3)(x-5) = 0$

$x = \frac{3}{2}$ *or* $x = 5$

Solution : $\frac{3}{2} < x < 5$



e) $(2x-3)^2 \geq 3x+1$

$4x^2 - 12x + 9 \geq 3x + 1$

$4x^2 - 15x + 8 = 0$

$x = \frac{15 \pm \sqrt{(-15)^2 - 4(4)(8)}}{2(4)}$

$x = 0.644$ *or* $x = 3.106$

Solution : $x \leq 0.644$ *or* $x \geq 3.106$

f) $5x^2 + 3x - 18 > (x+1)(2x-3)$

$5x^2 + 3x - 18 > 2x^2 - x - 3$

$3x^2 + 4x - 15 > 0$

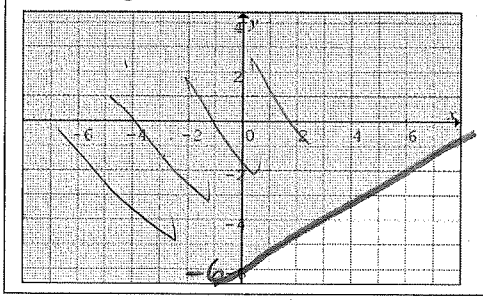
$(3x-5)(x+3) = 0$

$x = \frac{5}{3}$ *or* $x = -3$

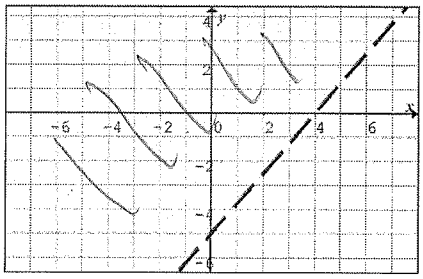
Solution : $x < -3$ *or* $x > \frac{5}{3}$

2. Graph the following inequalities.

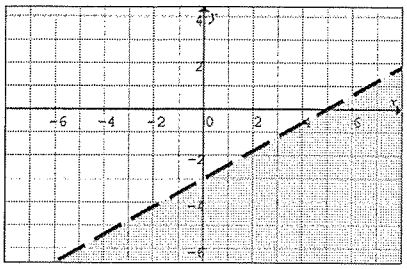
a) $y \geq \frac{2}{3}x - 6$



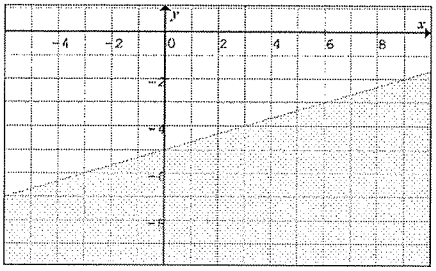
b) $5x - 4y < 20$



c) $0.4x - \frac{2}{3}y > 2$

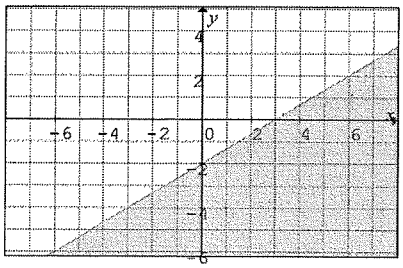


d) $\frac{1}{5}x - \frac{3}{5}y \geq 3$



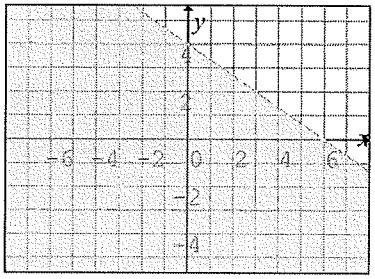
3. Write an inequality to describe each graph.

a)



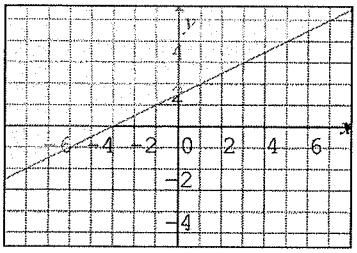
$2x - 3y \geq 6$

b)



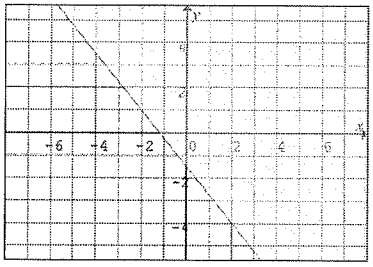
$2x + 3y \geq 12$

c)



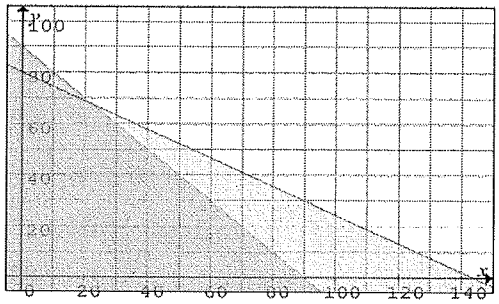
$x - 2y \leq -3$

d)



$y - 1 \geq -\frac{5}{4}(x + 2)$

5. Jonny Orchard has 90 hectares of land to produce apples and peaches. It costs him \$250 per hectares to plant x hectares of apples, and \$450 per hectares to plant y hectares of peaches. If no more than \$36 000 is available for planting, Write a system of inequalities to describe the situation and draw a graph to show up to how much Jonny can spend.

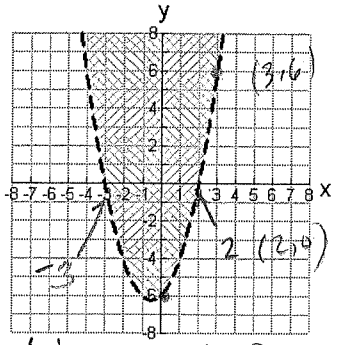


$x + y \leq 90$

$250x + 450y \leq 36000$

6. Write an inequality to describe each graph.

a)



Roots: $x = -3$ or $x = 2$

$y < a(x+3)(x-2)$

$-6 = a(0+3)(0-2)$

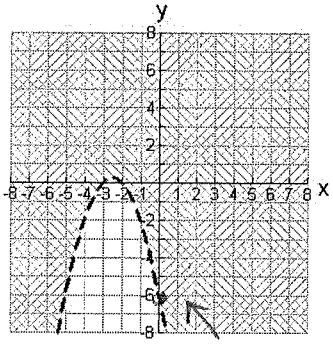
$\frac{-6}{-6} = \frac{a(-6)}{-6}$

$a = 1$

$y < 1(x+3)(x-2)$

$y < x^2 + x - 6$

b)



$y > a(x+3)(x+2)$

$-6 = a(0+3)(0+2)$

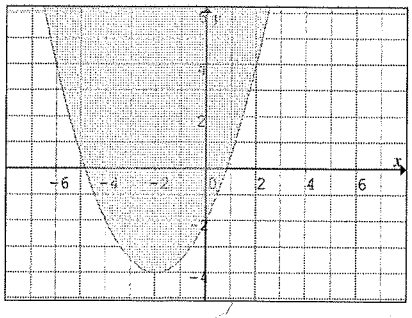
$-1 = a$

$y > -(x+3)(x+2)$

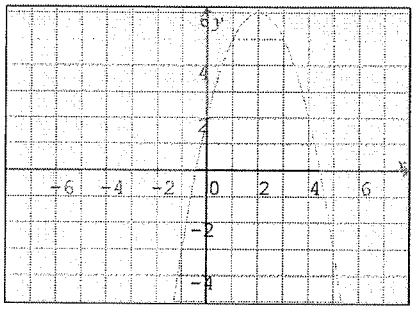
error!

7. Graph the following inequalities.

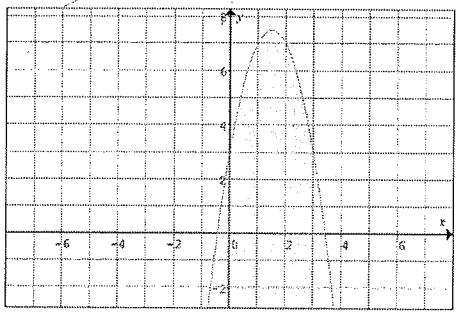
a) $y \geq \frac{1}{2}(x+2)^2 - 4$



b) $y \geq -x^2 + 4x + 2$

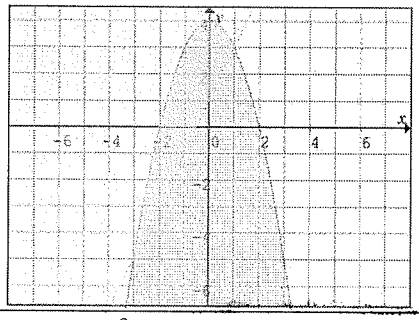


c) $y \leq -2x^2 + 6x + 3$



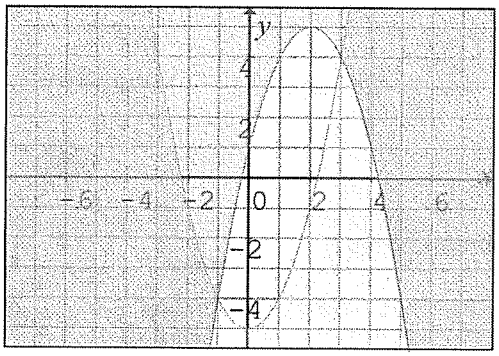
d) $y \leq 4 - x^2$

$y \geq 2x + 1$



e) $y < x^2 - 5$

$y \geq -x^2 + 4x + 1$



f) $y \geq x^2 - 3x - 4$

$y < \frac{1}{2}x^2 - \frac{3}{2}x$