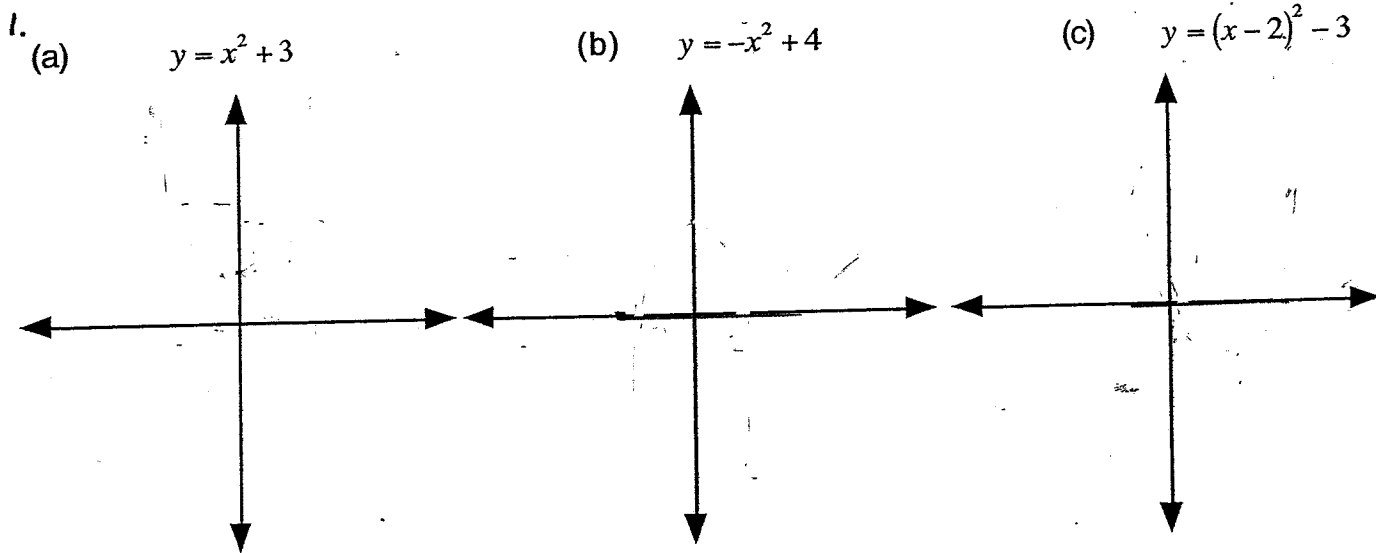


# SBHS - GRAPHS AND COORDINATE GEOMETRY - 2007

NAME \_\_\_\_\_

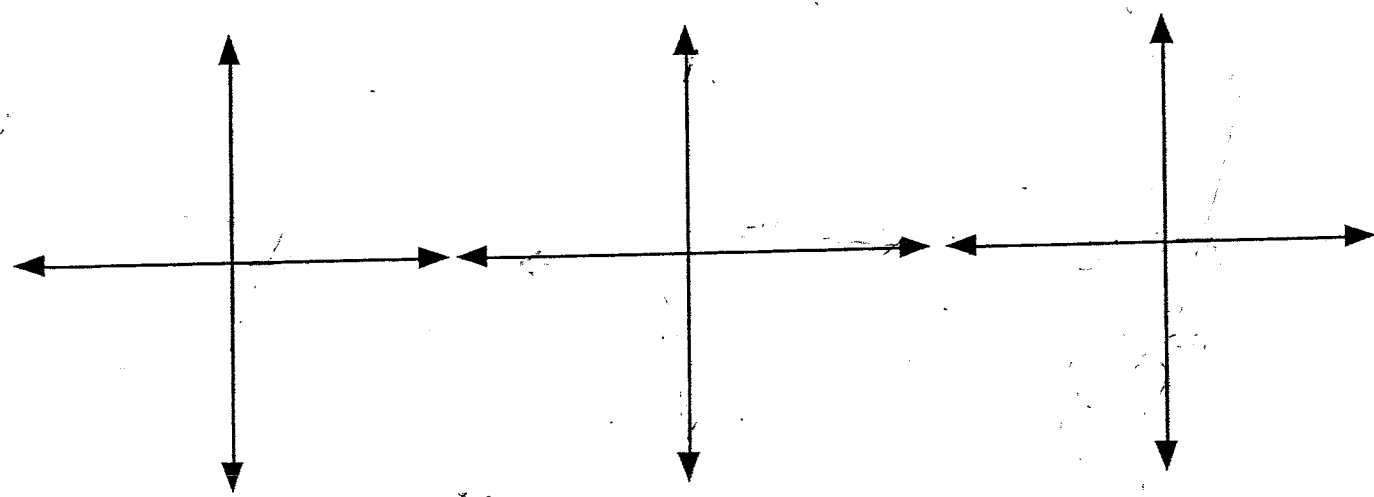
Sketch the following equations on the number planes below. Mark any intercepts. If there are no intercepts, mark two points on the graph. Your sketches need not be to scale.



2. (a) At what point do exponential graphs always cross the y axis? \_  
(b) Why? \_

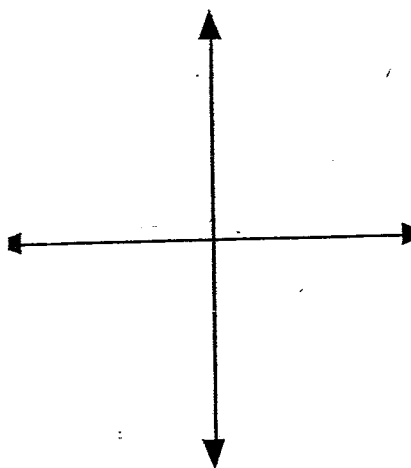
3. Sketch the graphs of these equations.

(a)  $y = 2x - 3$       (b)  $xy = 3$       (c)  $y = (x - 2)(x + 3)$



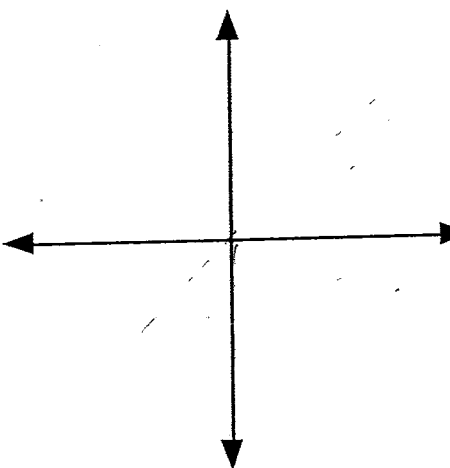
(d)

$$y = 3^x$$



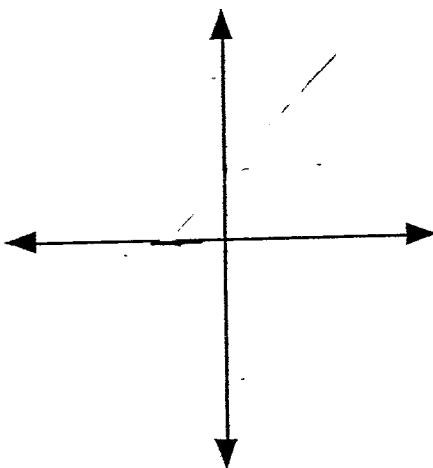
(e)

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



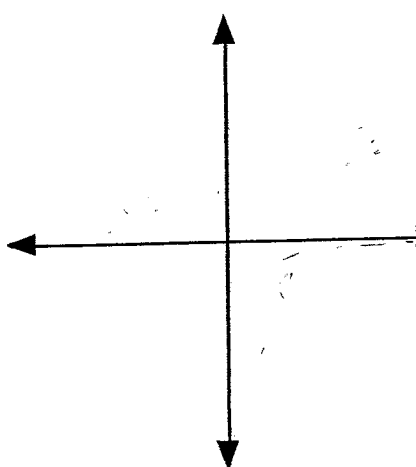
(f)

$$y = 3x + 2$$



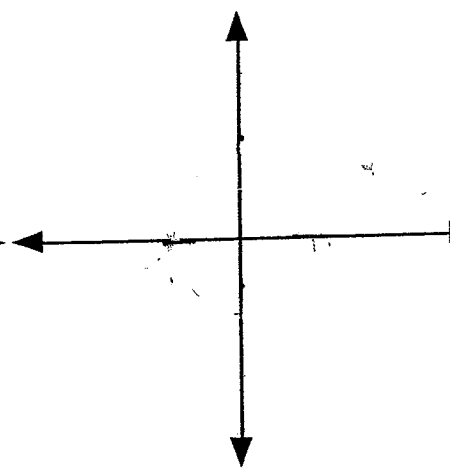
(g)

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



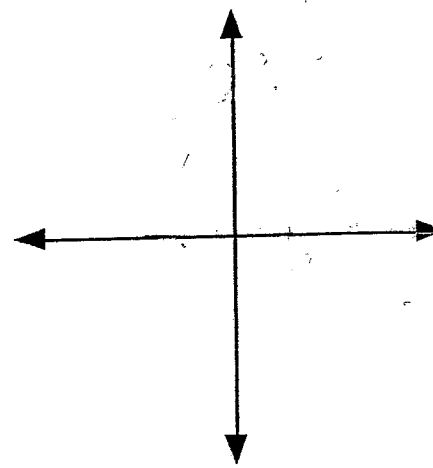
(h)

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



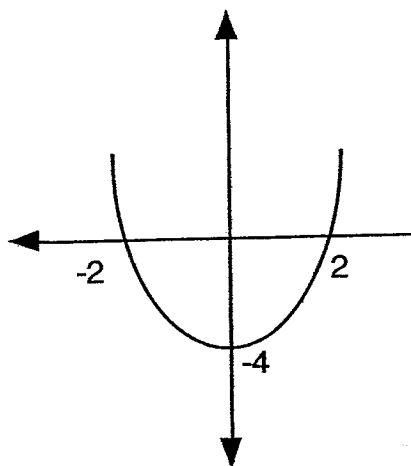
(i)

$$y = (3-x)(x+4)$$

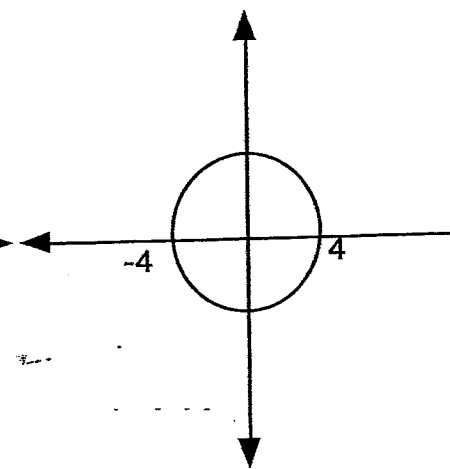


Write the correct equation under each sketch.

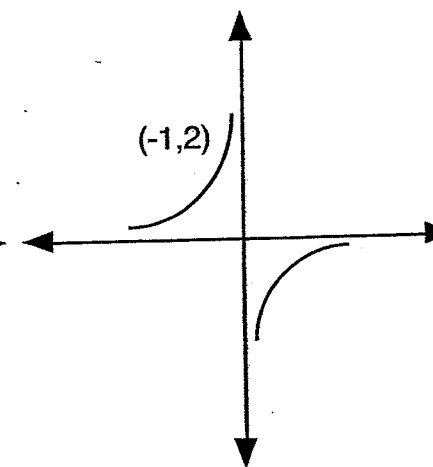
(a)



(b)

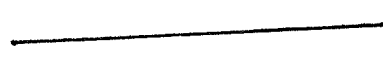
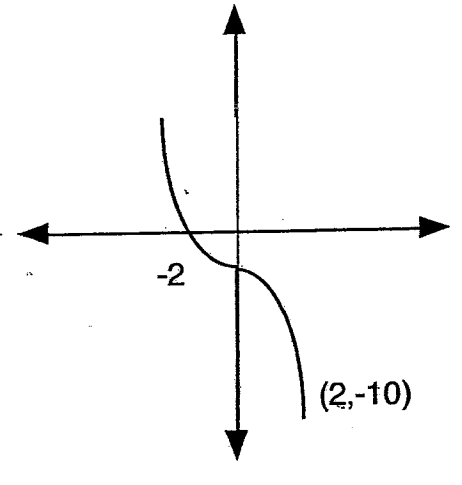
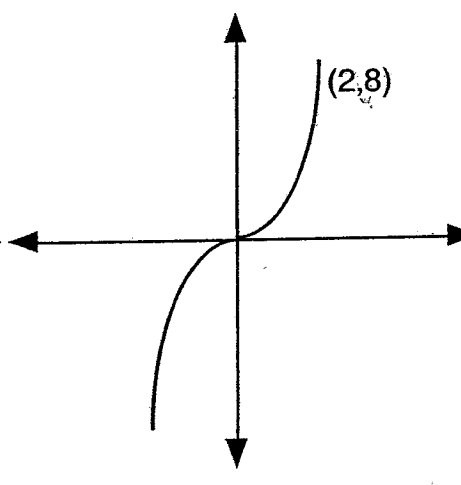
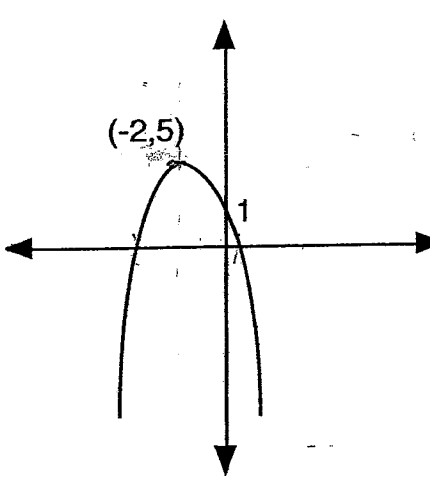
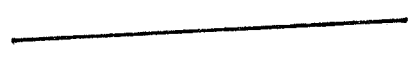
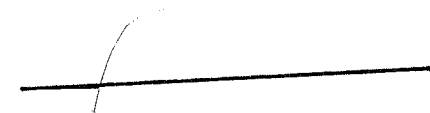
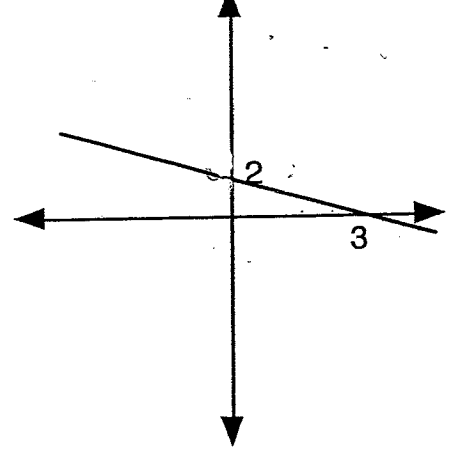
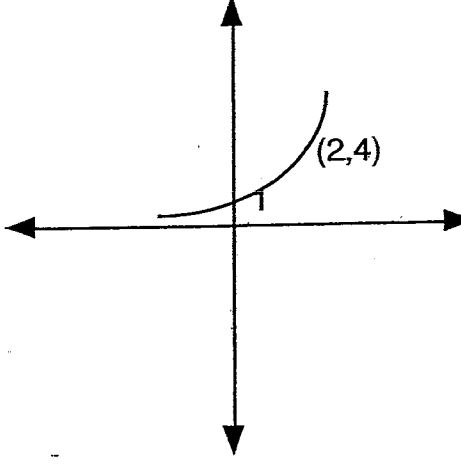
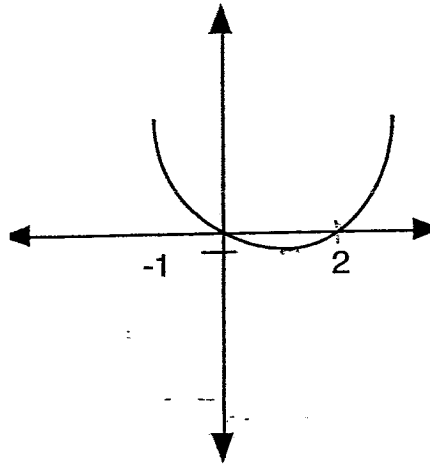


(c)

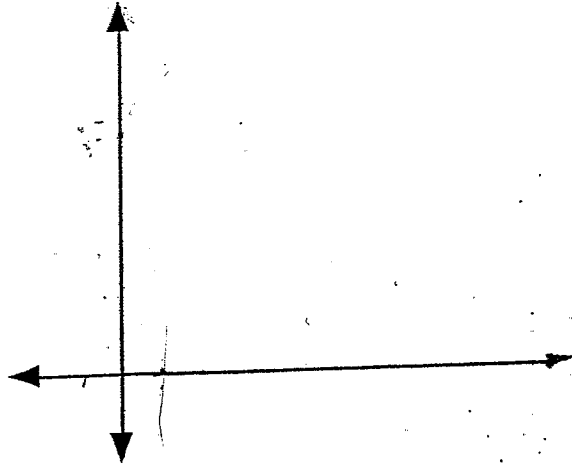


(continued)

(d)



On the set of axes below draw the triangle  $P(0,8)$   $Q(8,7)$   $R(4,0)$



(a) Show that the triangle  $PQR$  is isosceles

(b) Name the equal sides

(c) Write down the coordinates of  $T$ , the Midpoint of  $PR$

(d) Show that  $QT$  is perpendicular to  $PR$

(e) Write the equation of  $QT$

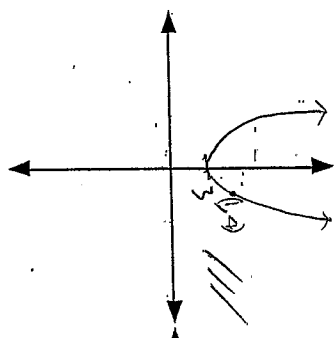
(f) Find the coordinates of a point  $S$ , so that  $PQRS$  is a Rhombus.

# GRAPHS AND COORDINATE GEOMETRY

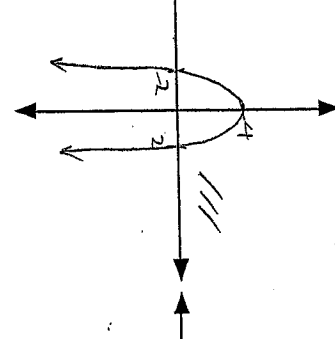
NAME: \_\_\_\_\_ SOLUTIONS:

Sketch the following equations on the number planes below. Mark any intercepts. If there are no intercepts, mark two points on the graph. Your sketches need not be to scale.

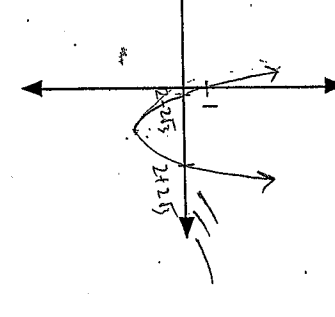
(a)  $y = x^2 + 3$



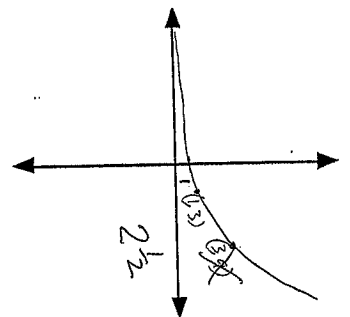
(b)  $y = -x^2 + 4$



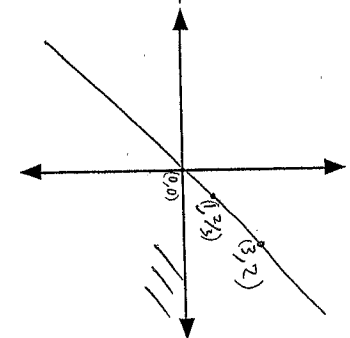
(c)  $y = (x-2)^2 - 3$



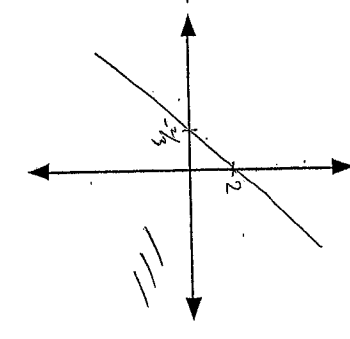
(d)  $y = 3x^2$



(e)  $y = \frac{2}{3}x$



(f)  $y = 3x + 2$

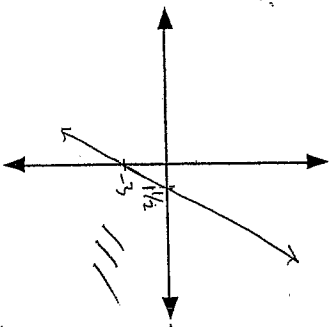


2. (a) At what point do exponential graphs always cross the y axis? 1

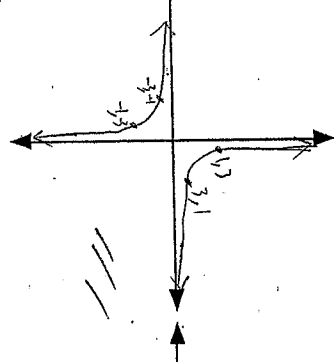
(b) Why? Because any value to the power of 0 will always equal one.

3. Sketch the graphs of these equations.

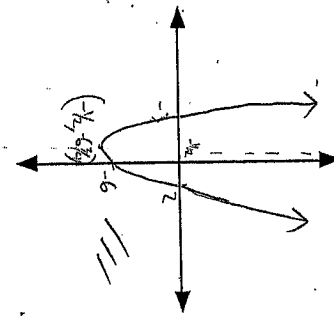
(a)  $y = 2x - 3$



(b)  $xy = 3$

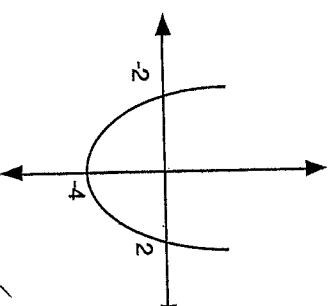


(c)  $y = (x-2)(x+3)$



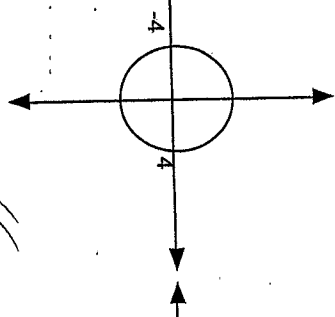
4. Write the correct equation under each sketch.

(a)



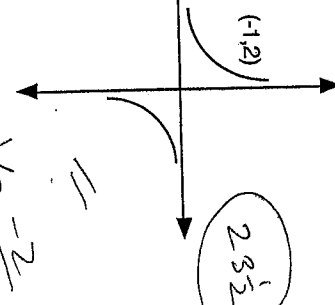
$y = -(x+2)(x-2)$

(b)



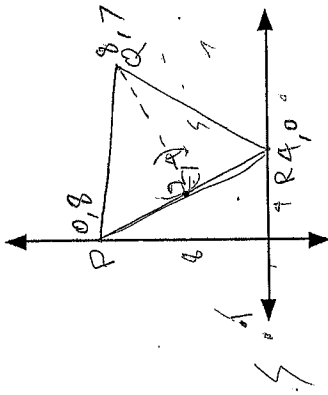
$x^2 + y^2 = 16$

(c)



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

On the set of axes below draw the triangle P(0,8) Q(8,7) R(4,0)



Show that the triangle PQR is isosceles

$PQ = \sqrt{8^2 + 1^2} = \sqrt{65}$   
 $PR = \sqrt{4^2 + 8^2} = \sqrt{80}$   
 $QR = \sqrt{4^2 + 7^2} = \sqrt{65}$   
 $PQ = QR$   
 $\Delta PQR$  is isosceles (equal sides)

Name the equal sides

PQ & QR

Write down the coordinates of T, the Midpoint of PR

(2, 4)

Show that QT is perpendicular to PR

$TQ \cdot M_2 = \frac{3}{4} \cdot \frac{1}{3} = \frac{1}{4}$   
 $M_2 = \frac{8}{4} = 2$   
 $M_1 = \frac{8}{4} = 2$   
 $M_2 = -1$

Write the equation of QT

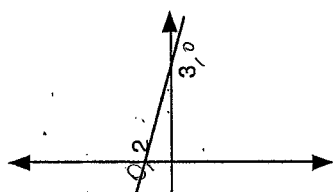
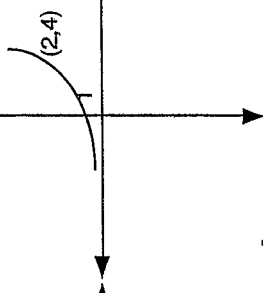
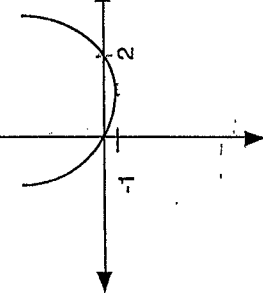
$y - 4 = \frac{1}{2}(x - 2)$   
 $y - 4 = \frac{1}{2}x - 1$   
 $y = \frac{1}{2}x + 3$

Find the coordinates of a point S, so that PQRS is a Rhombus.

-4, 1

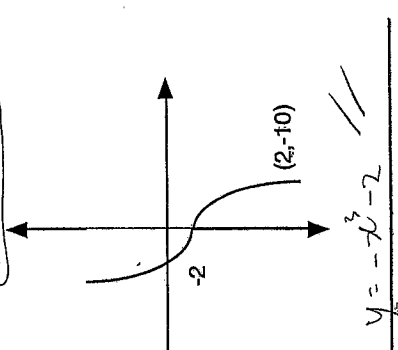
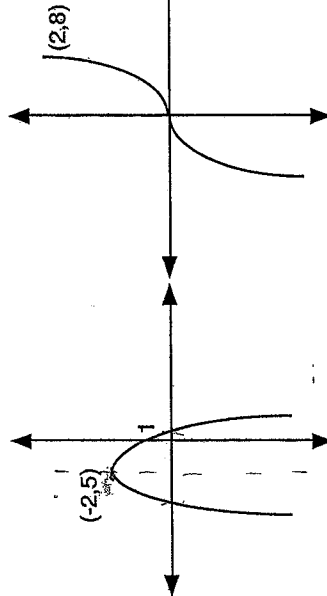
(continued)

$x$  int = 2, 0  
 $y = 0$   
 Sym = 1  
 Vert = -1



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

$y = -\frac{2}{3}(x-0)$   
 $y - 2 = -\frac{2}{3}x$   
 $y = -\frac{2}{3}x + 2$



$x = \frac{2 \pm \sqrt{4+16}}{2} = \frac{2 \pm \sqrt{20}}{2}$   
 $\text{Sym} = -2$   
 $y = 1$   
 Vertex = 5

10

$x = \frac{-2 \pm \sqrt{4+16}}{2} = \frac{-2 \pm \sqrt{20}}{2}$