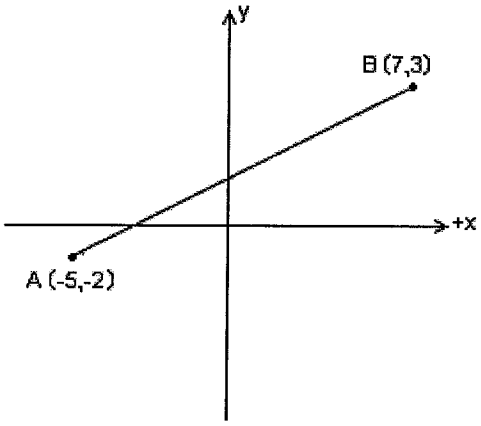
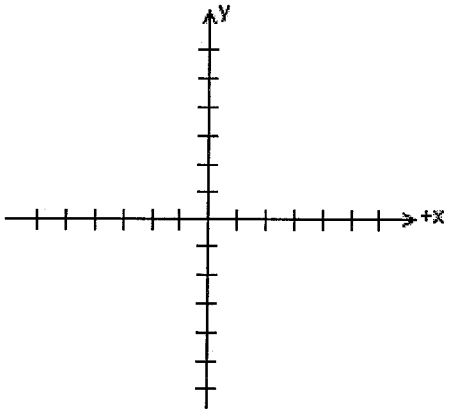
EXERCISES – GRAPHS

Name: _____

1. Find (a) the Mid-point of AB
   (a) the Length of AB and ...
   (b) the Gradient of AB



2. Sketch the graph of :-
   $2x - 3y = 9$



3. What is the gradient of the line:-
   $3x + 5y - 15 = 0$

4. Find the equation of the line through P=(2,-5) with gradient m= -3

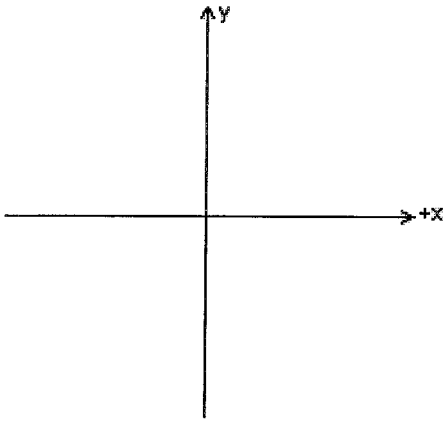
5. Find the equation of the line passing through P=(-2,4) and Q=(8,-1)

6. Find the equation of the line passing through A=(3,-5) which is perpendicular to: $3x + y = 11$

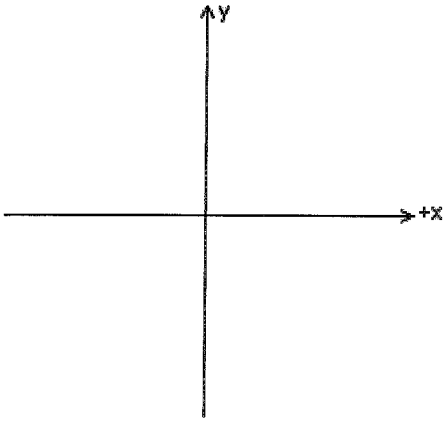
7. In ΔABC, A=(4,8) B=(1,-2) & C=(6,0) If **M** and **N** are the mid-points of **AB** and **AC** respectively, prove that MN is parallel to BC. (draw a diagram!)

8. Sketch the graphs of the following equations:-

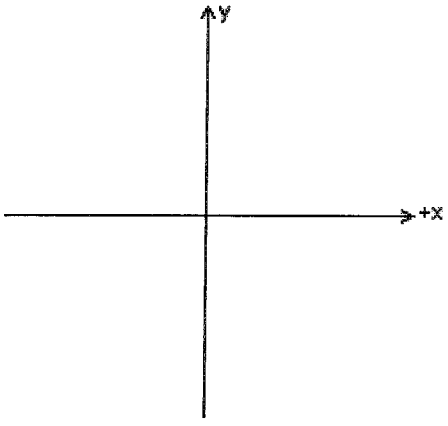
(a) $y = \frac{-6}{x}$



(b) $y = x^2 - 9$

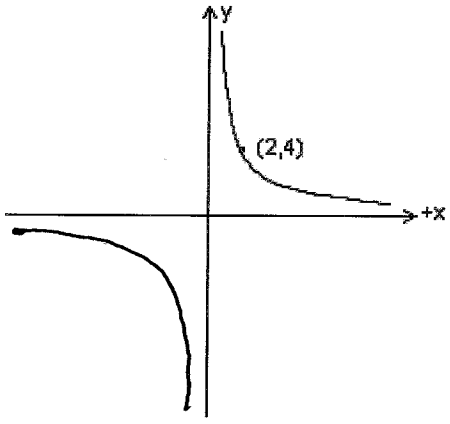


(c) $\frac{x^2}{16} + \frac{y^2}{36} = 1$



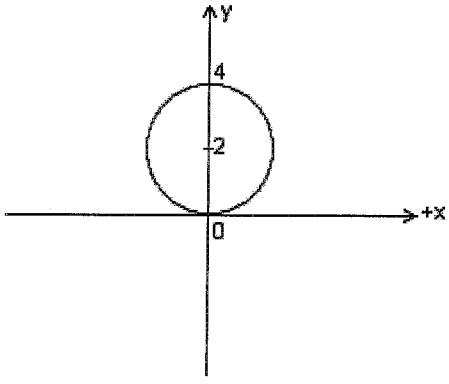
9. What is the equation of the following graphs ?

(a)



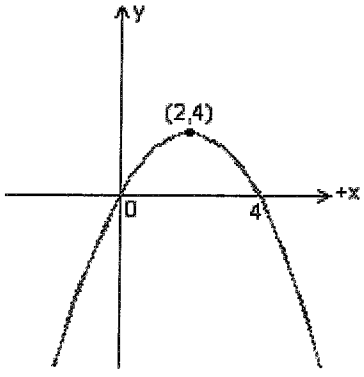
Equation is:

(b)



Equation is:-

(c)

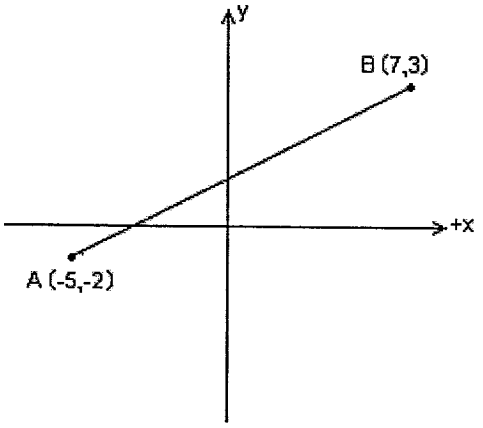


Equation is:-

EXERCISES – GRAPHS

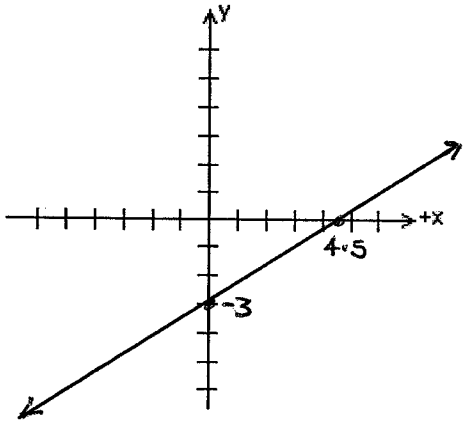
Name: SOLUTIONS

1. Find (a) the Mid-point of AB = $(1, \frac{1}{2})$
   (a) the Length of AB and ... = 13 units
   (b) the Gradient of AB $m = 5/12$



2. Sketch the graph of :-

   $2x - 3y = 9$



3. What is the gradient of the line:-

   $3x + 5y - 15 = 0$

   $5y = -3x + 15$

   $y = -\frac{3}{5}x + 3$

   $\therefore m = -3/5$

4. Find the equation of the line through P=(2,-5) with gradient m= -3

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

   $y + 5 = -3x + 6$

   $y = -3x + 1$

   or $3x + y - 1 = 0$

5. Find the equation of the line passing through P=(-2,4) and Q=(8,-1)

   $m_{PQ} = \frac{(-1)-(4)}{(8)-(-2)} = \frac{-5}{10} = -\frac{1}{2}$

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

   $2y - 8 = -x - 2$

   $x + 2y - 6 = 0$

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

6. Find the equation of the line passing through A=(3,-5) which is perpendicular to: 3x + y = 11

   $y = -3x + 11$

   $m_1 = -3$

   $\therefore m_\perp = \frac{1}{3}$

   Equ: $y + 5 = \frac{1}{3}(x - 3)$

   $3y + 15 = x - 3$

   $\therefore x - 3y + 18 = 0$

7. In ΔABC, A=(4,8) B=(1,-2) & C=(6,0) If **M** and **N** are the mid-points of **AB** and **AC** respectively, prove that MN is parallel to BC. (draw a diagram!)

   $M = (2{\cdot}5, 3)$ $N = (5,4)$

   gradient of MN $= \frac{(4)-(3)}{(5)-(2{\cdot}5)}$

   $= \frac{1}{2{\cdot}5} = \frac{2}{5}$

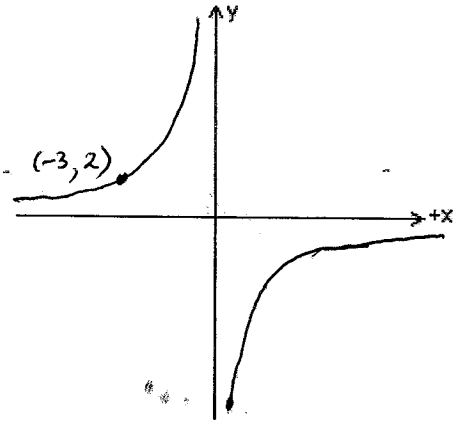
   gradient of BC $= \frac{(0)-(-2)}{(6)-(1)}$

   $= \frac{2}{5}$

   $\therefore$ BC // MN

8. Sketch the graphs of the following equations:-

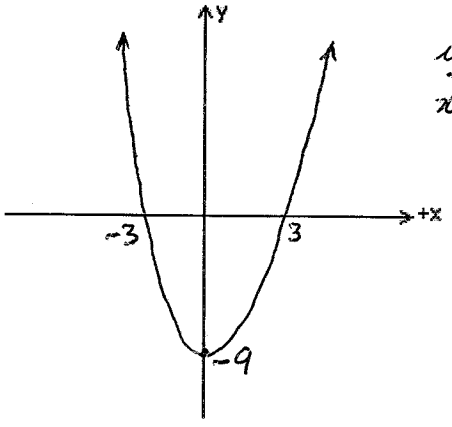
(a) $y = \frac{-6}{x}$



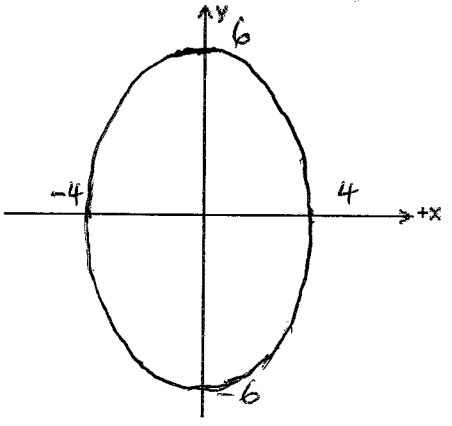
(b) $y = x^2 - 9$

$x = 0$, $y = -9$

$y = 0$, $x^2 - 9 = 0$, $x = \pm 3$



(c) $\frac{x^2}{16} + \frac{y^2}{36} = 1$

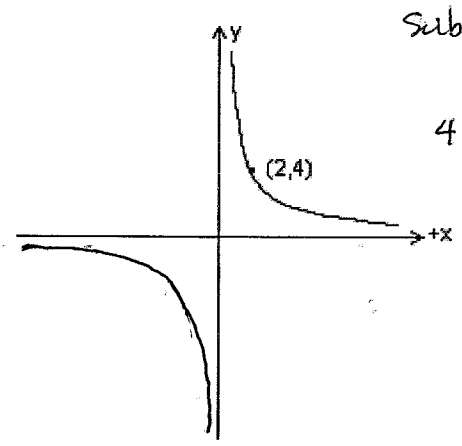


$x = 0$: $\frac{y^2}{36} = 1$, $y = \pm 6$

$y = 0$: $\frac{x^2}{16} = 1$, $x = \pm 4$

9. What is the equation of the following graphs ?

(a) $y = \frac{k}{x}$



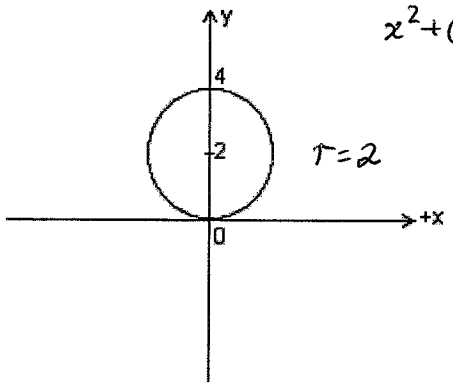
Subs: $x = 2$, $y = 4$

$4 = \frac{k}{2}$

$k = 8$

Equation is: $\boxed{y = \frac{8}{x}}$

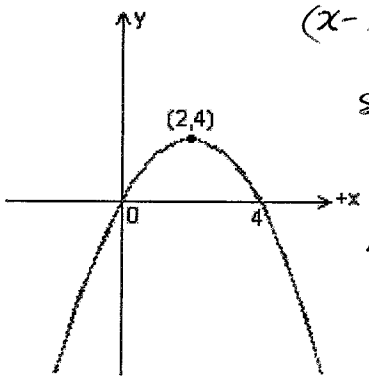
(b)



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

Equation is:- $\boxed{x^2 + y^2 - 4y = 0}$

(c)



$(x-\ )^2 = -4a(y-4)$

Subs. $(0, 0)$

$4 = -4a(-4)$

$4 = 16a$

$\frac{1}{4} = a$

Equation is:- $(x-2)^2 = -(y-4)$

or $y = 4 - (x-2)^2$

or $\boxed{y = 4x - x^2}$