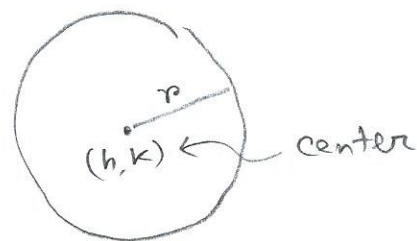


Standard form of a Circle
(Center-radius form)



$$(x-h)^2 + (y-k)^2 = r^2$$

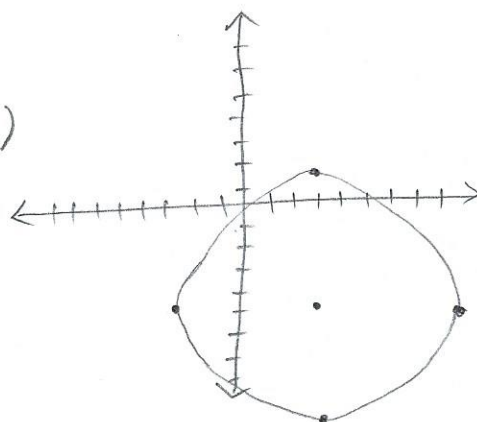
$$(x-3)^2 + (y+5)^2 = 36$$

\uparrow
 $h=3$

$y-(-5)$
 \uparrow
 $k=-5$

radius = 6

center (3, -5)



Completing the Square on circle

① Group x-terms and group y-terms. Move the constant term to the other side.

② Make sure the squared terms have a 1 as the coefficient. If it's not 1s, divide the entire equation by the coefficient of the squared terms.

③ To complete the square of x's take the coefficient of the 1st degree x-term off to the side.

Take half of that number and then square the results. This will be the magic number that will complete the square. Do the same thing with the y's.

④ Factor the perfect square trinomials you made.

Aside x's
 $\left(\frac{-2}{2}\right)^2 = (-1)^2 = 1$

Aside y's
 $\left(\frac{-6}{2}\right)^2 = (-3)^2 = 9$

⑦ $9 = 2y - y^2 - 6x - x^2$ ← make sure +1 in front of squared terms.

$$x^2 + y^2 + 6x - 2y = -9$$

$$x^2 + 6x + \boxed{9} + y^2 - 2y + \boxed{1} = -9 + 9 + 1$$

$$(x+3)^2 + (y-1)^2 = 1$$

Center : (-3, 1)

radius : 1

Magic # x's

$$\left(\frac{6}{2}\right)^2 = (3)^2 = \boxed{9}$$

Magic # y's

$$\left(\frac{-2}{2}\right)^2 = (-1)^2 = \boxed{1}$$

Center (h, k)

$$(x-h)^2 + (y-k)^2 = r^2$$

$$(x - (-3))^2 + (y-1)^2 = 1$$

$$* \frac{2x^2}{2} - \frac{10x}{2} + \frac{2y^2}{2} + \frac{16y}{2} = \frac{-73}{2}$$

$$x^2 - 5x + y^2 + 8y = \frac{-73}{4}$$

$$x^2 - 5x + \frac{25}{4} + y^2 + 8y + 16 = -\frac{73}{4} + \frac{25}{4} + 16$$

$$\left(x - \frac{5}{2}\right)^2 + (y+4)^2 = -12 + 16$$

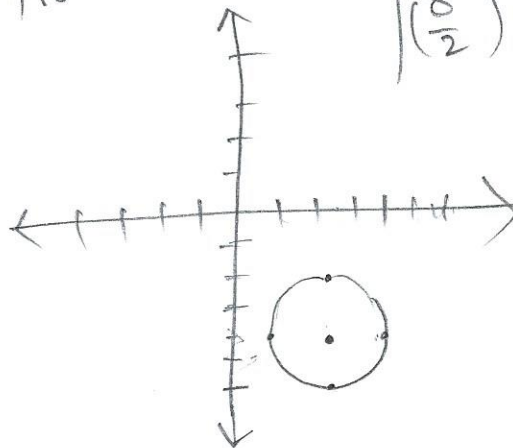
$$(x - 2.5)^2 + (y+4)^2 = 4$$

Magic # x's

$$\left(\frac{-5}{2}\right)^2 = \frac{25}{4}$$

Magic # y's

$$\left(\frac{8}{2}\right)^2 = 4^2 = 16$$



Functions

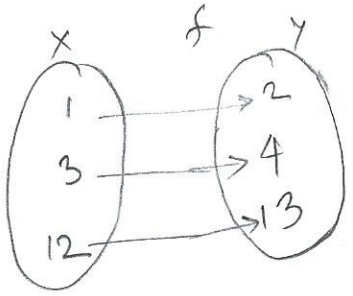
Relation - A set of ordered pairs

$$\{(1,2), (3,4), (12,13)\}$$

Function a special type of relation in which each x has exactly one y -value.

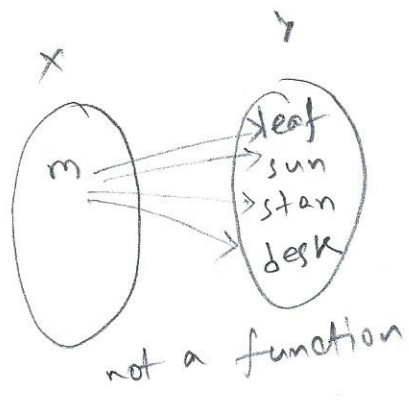
Domain - the set of all x -values for which a function is defined.

Range - the set of all y -values for which the function is defined.



*

Domain	Range
m	leaf
m	sun
m	stan
m	desk



*

Domain	Range
l	m
s	m
x	m
t	m

Function