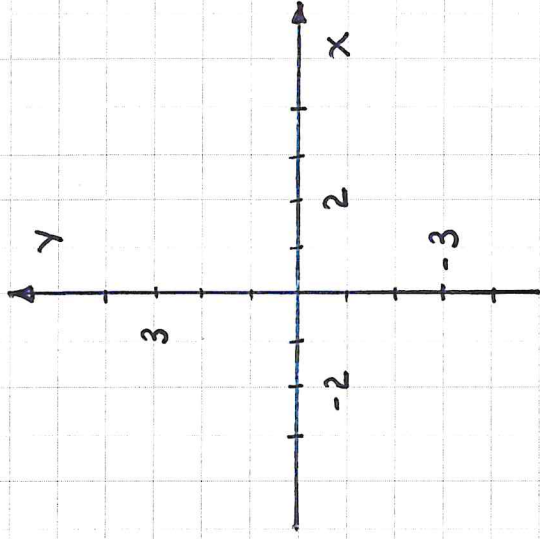


B.1 The Cartesian Coordinate System



The system is formed by two intersecting number lines that divide the plane into four quadrants.

The location of a point is specified by an ordered pair (x, y) .

Given two points (x_1, y_1) and (x_2, y_2) we can find:

1) The slope of the line through them

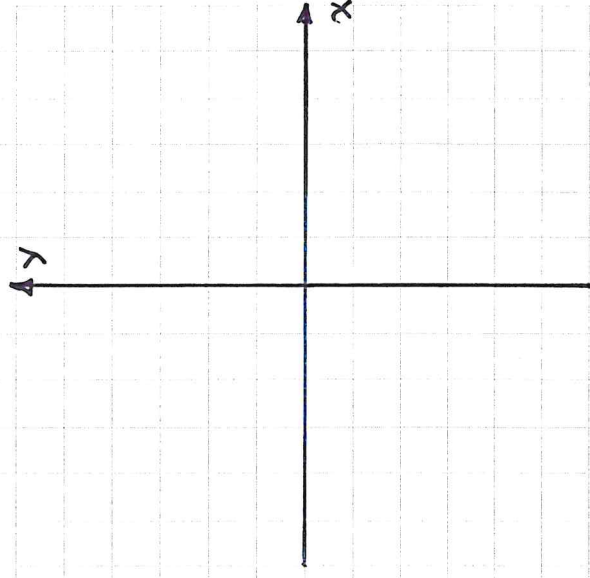
Slope $(m) =$

2) The distance between them

$d =$

3) The midpoint of the segment joining them

Midpoint $=$

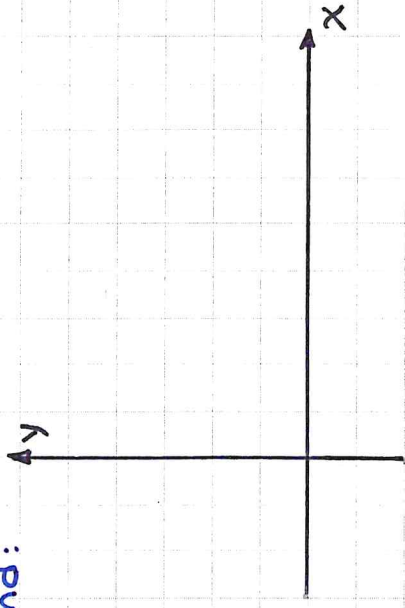


Ex. ① Given the points: $(-2, 5)$ and $(6, 1)$, find:

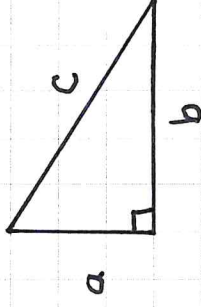
a) $m =$

b) $d =$

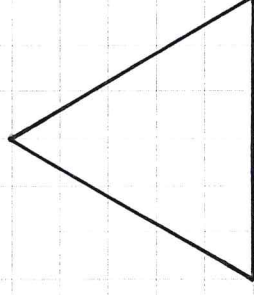
c) Midpoint



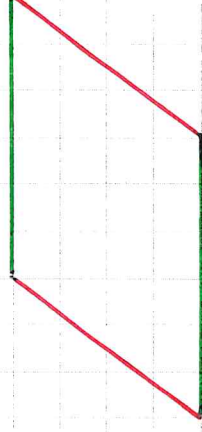
Notes: 1) A right triangle has one right angle and satisfies the Pythagorean theorem.



2) An isosceles triangle has two congruent sides.

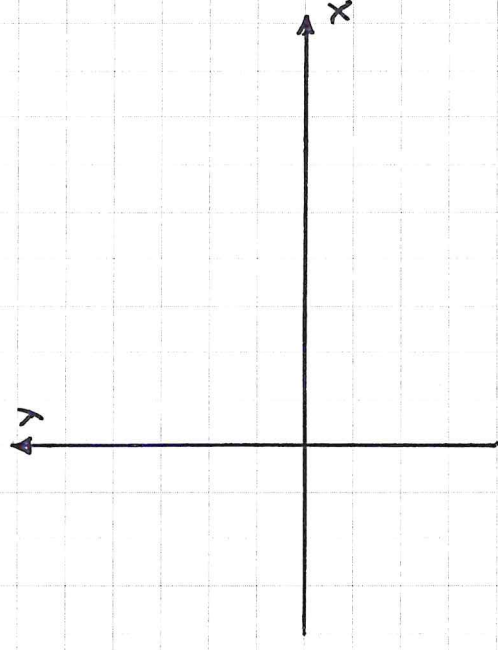


3) A parallelogram is a quadrilateral whose opposite sides are parallel.



DEFINITION: A circle is the set of all points in a plane that are the same distance from a fixed point called the center.

Ex. ② Find an equation of the circle centered at the point $(3,1)$ with a radius of 4.



In general, a circle centered at the point (h,k) with radius r has the equation

Ex. ③ Given that $A(-3, 1)$ and $B(5, -5)$ are the endpoints of a diameter, find an equation of the circle.

Note: The center will be at the midpoint of the diameter.

So, $C =$

Note: The radius is one half of the diameter.

So, $r =$

And the equation is:

