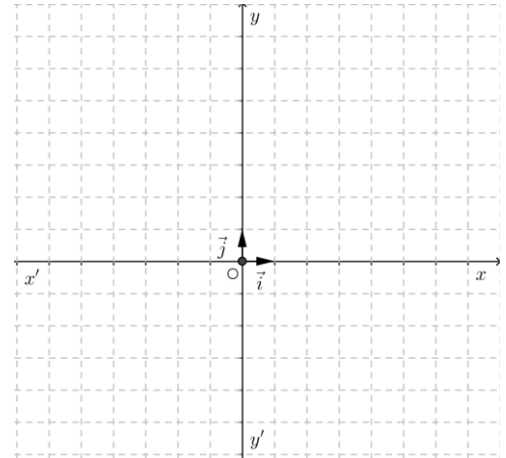


❖ Cartesian equation of a circle

App-1: Consider in the orthonormal plane $(O; \vec{i}, \vec{j})$ the fixed points $I(2,1), B(4,3)$ and the variable point $M(x, y)$.

- a. Plot the points I & B .
- b. Calculate the distance between the points I & B .
.....
- c. Let (c) be a circle of center I and radius IB
 - i. Determine \overline{IM}^2 in terms of x & y
.....
 - ii. What relation exists between x & y , so that $M \in (c)$.
.....
 - iii. What does the above relation represent?
.....
 - iv. Verify the point $J(3,-5)$ is exterior to (c) .
.....
 - v. Find relative positions of (c) and $N(-1,0)$
.....



Conclusions: The Cartesian equation of a circle of center $I(a;b)$ and radius R cm is:

$$(x - a)^2 + (y - b)^2 = R^2$$

Relative positions of a circle and a point, if the distance between a point and the center of the circle is:

- 1) Less than the radius then the given point is
- 2), then the given point is on the circle.
- 3) Greater than the

❖ Equation of a circle knowing its diameter:

App-2: Let $M(x, y)$ be any point on the circle (c) of diameter $[AB]$, where $A(2,3)$ & $B(-1;2)$

- 1) Indicate the measure of \widehat{AMB}
- 2) Indicate with justification the value of: $\vec{MA} \cdot \vec{MB} =$
- 3) What does the above dot product represent? Explain
- 4) Deduce the equation of (c)

