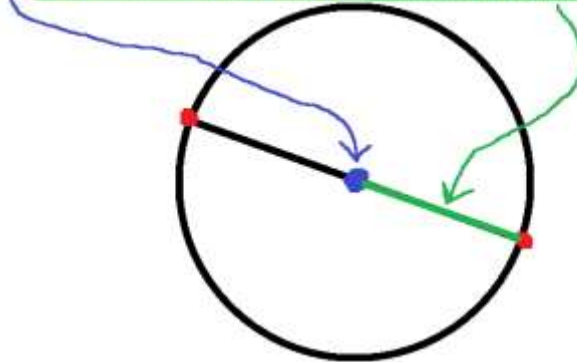


# How To Find Center & Radius Of A Circle

Write the circle equation in standard form to make it easy to find the center  $(a, b)$  and the radius  $r$ .

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

We can use 2 points at opposite ends of a diameter. The midpoint is the circle's center, and the radius is half the diameter.



Given 3 points on a circle, we can find the center  $(a, b)$  and radius  $r$  by solving a system of 3 equations in 3 unknowns  $(a, b, \text{ and } r)$ .

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

$$(3 - a)^2 + (3 - b)^2 = r^2 \text{ [from } (3, 3)]$$

$$(1 - a)^2 + (5 - b)^2 = r^2 \text{ [from } (1, 5)]$$

$$(1 - a)^2 + (1 - b)^2 = r^2 \text{ [from } (1, 1)]$$

