

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

GENERAL FORM: $ax^2 + by^2 + cx + dy + e = 0$

1. Convert to general form: $x^2 + (y + 4)^2 = 9$.

2. Convert to general form: $(x + 1)^2 + (y - 4)^2 = 8$.

CONVERTING FROM GENERAL TO STANDARD FORM!!!

If the quadratic equation isn't in the standard form for a circle, we must first **complete the square** to get it in the correct form.

Steps to complete the square.

First, prepare the terms:

- Group _____ and leave a space.
- Group _____ and leave a space.
- Move the constant and leave _____.

Then, complete the square:

- $\frac{1}{2}$ the linear term and square it.
- Add to both sides.
- Do this for both x and y.
- Factor and simplify.

1. $x^2 + y^2 + 16x - 22y - 20 = 0$

2. $x^2 + y^2 - 12x + 8y + 32 = 0$

3. $x^2 + y^2 + 2x - 15 = 0$