

Exercise 1.4.17 Write the standard form and the general form of the circle with center  $r = 5$  and center  $(h, k) = (4, -3)$ .

Graph the circle.

Solution

The standard form of a circle with radius  $r$  and center  $(h, k)$  is

$(x-h)^2 + (y-k)^2 = r^2$ , so we have the standard form of the given circle as

$$(x-(4))^2 + (y-(-3))^2 = (5)^2$$

or  $(x-4)^2 + (y+3)^2 = 25$ .

The general form is  $x^2 - 8x + 16 + y^2 + 9y + 9 = 25$

or  $x^2 + y^2 - 8x + 9y = 0$ .

The graph is

