

Aim: What is the standard equation of a circle?

HW: page 172 # 8,10,12,14, 16,22,24,26 page 166 # 21

Do Now:

1. The endpoints of a diameter of a circle are $P(6,1)$ and $Q(-4,-5)$. Find the coordinates of the center and the length of the radius.

Center: (1,-2)

Radius = $\sqrt{34}$

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What is the equation of a circle?

1. Center - Radius Form

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

(h,k) = center r = radius

How would you write the do now as an equation?

$$(x - 1)^2 + (y + 2)^2 = 34$$

2. Standard Form

$$x^2 + y^2 + Dx + Ey + F = 0$$

$$(x - 1)^2 + (y + 2)^2 = 34$$

How would you put the circle equation in standard form

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2.

Find the center and radius of the circle whose equation is $x^2 + y^2 - 4x + 6y - 3 = 0$

In order to find the center and radius, we first need to write the equation in center-radius form

Complete the squares for $x^2 - 4x$ and $y^2 + 6y$

$$x^2 - 4x + y^2 + 6y = 3$$

$$(x^2 - 4x + 4) + (y^2 + 6y + 9) = 3 + 13$$

$$(x - 2)^2 + (y + 3)^2 = 16$$

Center: (2,-3) **radius** = 4

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3. The standard form of a circle is:

$$x^2 + y^2 + 3x - 4y - 14 = 0$$

Find the radius and center.

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4. The center of the circle is $C(-1,1)$ and point $P(-1,5)$ is on the circle. Write the equation in a) center-radius form b) standard form.

We need to find the radius.

$$r = \sqrt{(-1+1)^2 + (1-5)^2} =$$

Find the center and radius for #1 and #2

1. $x^2 + y^2 - 6x + 2y - 6 = 0$

2. $x^2 + y^2 - 2x - 2y - 7 = 0$

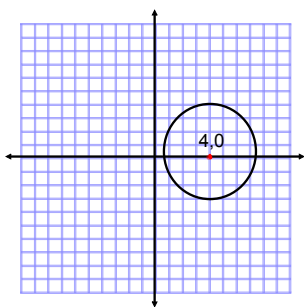
3. Write a) center-radius form b) standard form

Center $C(1,1)$ a point $P(6,13)$ on the circle

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Write the equation in center form and standard form.



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