

Written assignments
to hand in.

Section 1.1 24, 42
Due Wednesday 9/20

Section 1.2 74, 88
Due Friday 9/22

Section 1.3 48, 52
Due Monday 9/25

Discussion Problems
From the department syllabus
These are not to hand in.

Section 1.2, 1.3

WebAssign
Sections 1.1+1.2
Friday 9/22 at 9pm.

Exam 1 covering
sections P2-P8, 1.1-1.4
Friday 9/29

Calculators which are internet
enabled (e.g., mobile phones)
and which can do symbolic
manipulations are not allowed.
See me if you are unsure
about your calculator.

Section 1.2

(67) $x^2 + y^2 = 9$ find the center + radius of circle. Sketch.

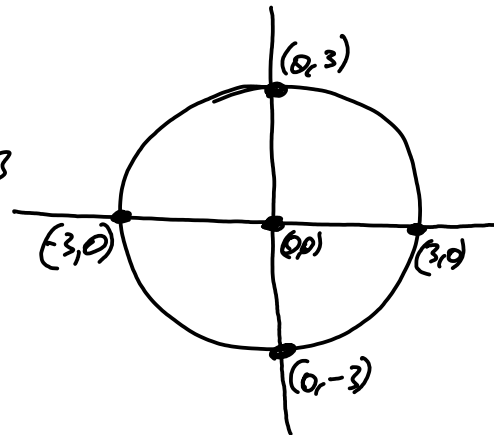
$$(x-h)^2 + (y-k)^2 = r^2$$

Center = (h, k)

radius = r

Center = $(0, 0)$

radius = $\sqrt{9} = 3$



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

Center = $(-3, 4)$

radius = $\sqrt{25} = 5$

Sketch the graph w/ x- and y-intercepts.

x-intercepts

let $y=0$

$$(x+3)^2 + (0-4)^2 = 25$$

$$(x+3)^2 + 16 = 25$$

-16 -16

$$(x+3)^2 = 9$$

$$\sqrt{(x+3)^2} = \pm\sqrt{9}$$

$$x+3 = \pm 3$$

-3 -3

$$x = \pm 3 - 3$$

$$x = 3 - 3 = 0$$

$$x = -3 - 3 = -6$$

y-intercepts

let $x=0$

$$(0+3)^2 + (y-4)^2 = 25$$

$$9 + (y-4)^2 = 25$$

-9 -9

$$(y-4)^2 = 16$$

$$\sqrt{(y-4)^2} = \pm\sqrt{16}$$

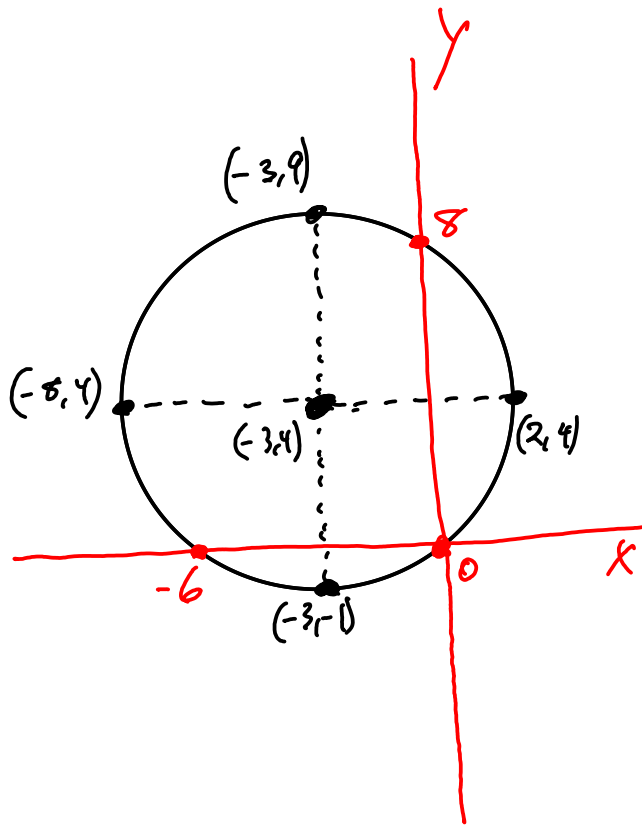
$$y-4 = \pm 4$$

+4 +4

$$y = 4 \pm 4$$

$$y = 4 - 4 = 0$$

$$y = 4 + 4 = 8$$



73) Find the equation of the circle satisfying

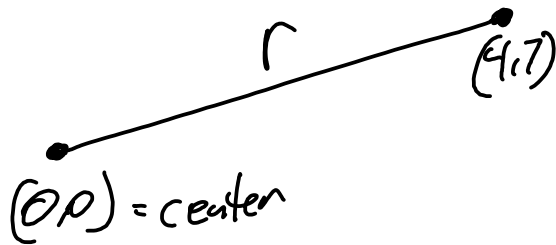
$$\text{center} = (-3, 2)$$

$$\text{radius} = 5$$

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

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

75) Center at the origin and passes through (4, 7).



$$r = \sqrt{(4-0)^2 + (7-0)^2}$$

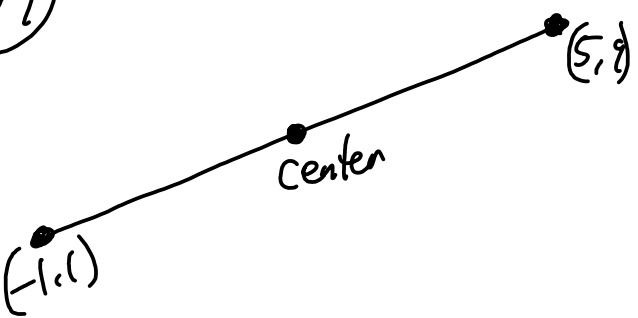
$$r = \sqrt{16 + 49}$$

$$r = \sqrt{65}$$

$$r^2 = 65$$

equation of the circle

$$x^2 + y^2 = 65$$

77)  is a diameter of the circle.

$$\text{center} = \left(\frac{-1+5}{2}, \frac{1+9}{2} \right) = (2, 5)$$

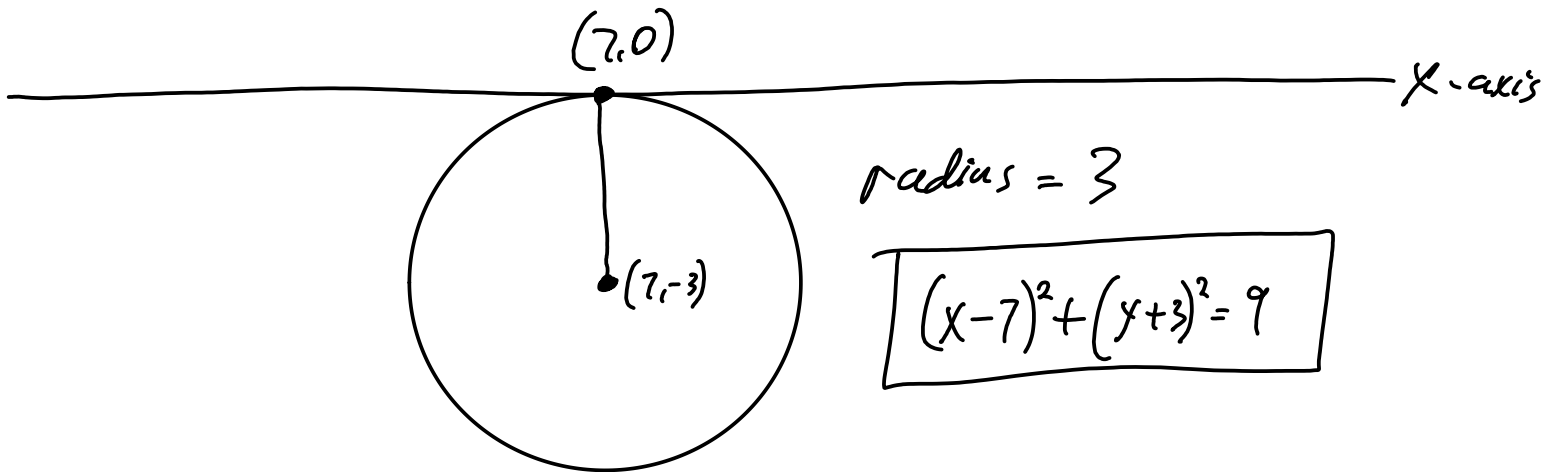
$$\text{radius} = \frac{1}{2} \sqrt{(5-(-1))^2 + (9-1)^2} = \frac{1}{2} \sqrt{36 + 64} \\ = \frac{1}{2} \sqrt{100} = \frac{1}{2} \cdot 10 = 5$$

equation

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

$$\boxed{(x-2)^2 + (y-5)^2 = 25}$$

79) Center at $(7, -3)$ and tangent to the x -axis.



83) Put the equation of the circle into standard form $(x-h)^2 + (y-k)^2 = r^2$, determine the center + radius

$$x^2 + y^2 - 2x - 4y + 1 = 0$$

-1 -1

$$x^2 - 2x + y^2 - 4y = -1$$

+1 +4 +1+4

$$(x^2 - 2x + 1) + (y^2 - 4y + 4) = 4$$

now "complete the squares"

$$\left(\frac{2}{2}\right)^2 = 1$$

$$\left(\frac{4}{2}\right)^2 = 4$$

$$(x-1)^2 + (y-2)^2 = 4$$

$$\text{Center} = (1, 2)$$

$$\text{radius} = \sqrt{4} = 2$$

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$$x^2 + y^2 - 4x + 10y + 13 = 0$$

$$x^2 - 4x + y^2 + 10y = -13$$

+4 +25 +4+25

$$\left(\frac{4}{2}\right)^2 = 4$$

$$\left(\frac{10}{2}\right)^2 = 25$$

$$(x^2 - 4x + 4) + (y^2 + 10y + 25) = 16$$

$$(x-2)^2 + (y+5)^2 = 16$$

$$\text{Center} = (2, -5)$$

$$\text{radius} = 4$$