

## Writing Equations of Circles

Use the information provided to write the standard form equation of each circle.

1)  $8x + x^2 - 2y = 64 - y^2$

2)  $137 + 6y = -y^2 - x^2 - 24x$

3)  $x^2 + y^2 + 14x - 12y + 4 = 0$

4)  $y^2 + 2x + x^2 = 24y - 120$

5)  $x^2 + 2x + y^2 = 55 + 10y$

6)  $8x + 32y + y^2 = -263 - x^2$

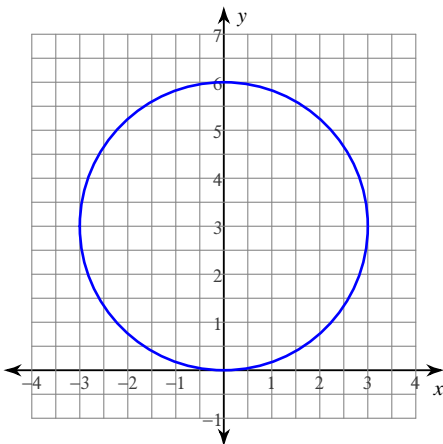
7) Center:  $(-11, -8)$   
Radius: 4

8) Center:  $(-6, -15)$   
Radius:  $\sqrt{5}$

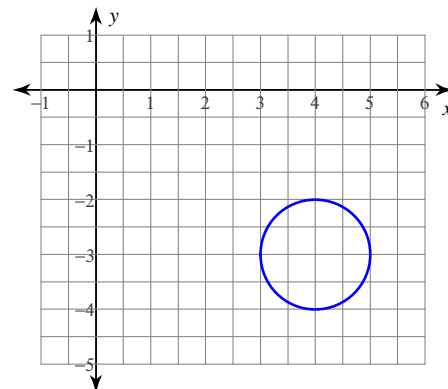
9)  $(x - 16)^2 + (y - 6)^2 = 1$   
Translated 4 left, 2 up

10)  $(x + 5)^2 + (y + 7)^2 = 36$   
Translated 5 left, 4 down

11)



12)



- 13) Ends of a diameter:  $(-17, -9)$  and  $(-19, -9)$
- 14) Ends of a diameter:  $(-3, 11)$  and  $(3, -13)$
- 15) Center:  $(-15, 3\sqrt{7})$   
Area:  $2\pi$
- 16) Center:  $(-11, -14)$   
Area:  $16\pi$
- 17) Center:  $(-5, 12)$   
Circumference:  $8\pi$
- 18) Center:  $(15, 14)$   
Circumference:  $2\pi\sqrt{15}$
- 19) Center:  $(2, -5)$   
Point on Circle:  $(-7, -1)$
- 20) Center:  $(14, 17)$   
Point on Circle:  $(15, 17)$
- 21) Center:  $(-15, 9)$   
Tangent to  $x = -17$
- 22) Center:  $(-2, 12)$   
Tangent to  $x = -5$
- 23) Center lies on the x-axis  
Tangent to  $x = 7$  and  $x = -13$
- 24) Center lies in the fourth quadrant  
Tangent to  $x = 7$ ,  $y = -4$ , and  $x = 17$
- 25) Three points on the circle:  
 $(-18, -5)$ ,  $(-7, -16)$ , and  $(4, -5)$
- 26) Three points on the circle:  
 $(-7, 6)$ ,  $(9, 6)$ , and  $(-4, 13)$
- 27)  $x^2 + y^2 + 14x + 12y + 76 = 0$   
Translated 2 right, 4 down
- 28)  $x^2 + y^2 - 10x + 20y + 61 = 0$   
Translated 1 left, 2 down
- 29)  $x^2 + y^2 + 14x - 8y + 29 = 0$   
Translated 3 right, 4 down
- 30)  $4y + y^2 = -28x - x^2 - 191$   
Translated 4 right

## Writing Equations of Circles

Use the information provided to write the standard form equation of each circle.

1)  $8x + x^2 - 2y = 64 - y^2$

$$(x + 4)^2 + (y - 1)^2 = 81$$

2)  $137 + 6y = -y^2 - x^2 - 24x$

$$(x + 12)^2 + (y + 3)^2 = 16$$

3)  $x^2 + y^2 + 14x - 12y + 4 = 0$

$$(x + 7)^2 + (y - 6)^2 = 81$$

4)  $y^2 + 2x + x^2 = 24y - 120$

$$(x + 1)^2 + (y - 12)^2 = 25$$

5)  $x^2 + 2x + y^2 = 55 + 10y$

$$(x + 1)^2 + (y - 5)^2 = 81$$

6)  $8x + 32y + y^2 = -263 - x^2$

$$(x + 4)^2 + (y + 16)^2 = 9$$

7) Center:  $(-11, -8)$

Radius: 4

$$(x + 11)^2 + (y + 8)^2 = 16$$

8) Center:  $(-6, -15)$

Radius:  $\sqrt{5}$ 

$$(x + 6)^2 + (y + 15)^2 = 5$$

9)  $(x - 16)^2 + (y - 6)^2 = 1$

Translated 4 left, 2 up

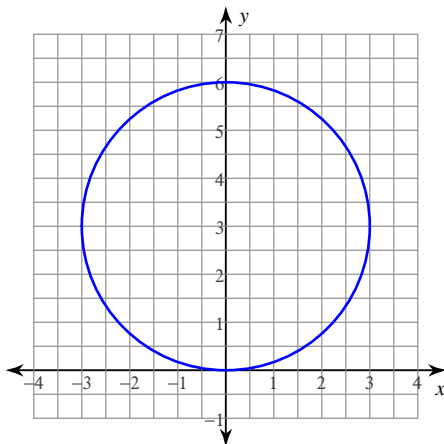
$$(x - 12)^2 + (y - 8)^2 = 1$$

10)  $(x + 5)^2 + (y + 7)^2 = 36$

Translated 5 left, 4 down

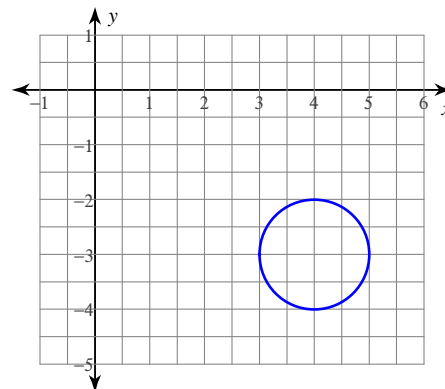
$$(x + 10)^2 + (y + 11)^2 = 36$$

11)



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

12)



$$(x - 4)^2 + (y + 3)^2 = 1$$

13) Ends of a diameter:  $(-17, -9)$  and  $(-19, -9)$

$$(x + 18)^2 + (y + 9)^2 = 1$$

15) Center:  $(-15, 3\sqrt{7})$

Area:  $2\pi$

$$(x + 15)^2 + (y - 3\sqrt{7})^2 = 2$$

17) Center:  $(-5, 12)$

Circumference:  $8\pi$

$$(x + 5)^2 + (y - 12)^2 = 16$$

19) Center:  $(2, -5)$

Point on Circle:  $(-7, -1)$

$$(x - 2)^2 + (y + 5)^2 = 97$$

21) Center:  $(-15, 9)$

Tangent to  $x = -17$

$$(x + 15)^2 + (y - 9)^2 = 4$$

23) Center lies on the x-axis

Tangent to  $x = 7$  and  $x = -13$

$$(x + 3)^2 + y^2 = 100$$

25) Three points on the circle:

$(-18, -5)$ ,  $(-7, -16)$ , and  $(4, -5)$

$$(x + 7)^2 + (y + 5)^2 = 121$$

27)  $x^2 + y^2 + 14x + 12y + 76 = 0$

Translated 2 right, 4 down

$$(x + 5)^2 + (y + 10)^2 = 9$$

29)  $x^2 + y^2 + 14x - 8y + 29 = 0$

Translated 3 right, 4 down

$$(x + 4)^2 + y^2 = 36$$

14) Ends of a diameter:  $(-3, 11)$  and  $(3, -13)$

$$x^2 + (y + 1)^2 = 153$$

16) Center:  $(-11, -14)$

Area:  $16\pi$

$$(x + 11)^2 + (y + 14)^2 = 16$$

18) Center:  $(15, 14)$

Circumference:  $2\pi\sqrt{15}$

$$(x - 15)^2 + (y - 14)^2 = 15$$

20) Center:  $(14, 17)$

Point on Circle:  $(15, 17)$

$$(x - 14)^2 + (y - 17)^2 = 1$$

22) Center:  $(-2, 12)$

Tangent to  $x = -5$

$$(x + 2)^2 + (y - 12)^2 = 9$$

24) Center lies in the fourth quadrant

Tangent to  $x = 7$ ,  $y = -4$ , and  $x = 17$

$$(x - 12)^2 + (y + 9)^2 = 25$$

26) Three points on the circle:

$(-7, 6)$ ,  $(9, 6)$ , and  $(-4, 13)$

$$(x - 1)^2 + \left(y - \frac{47}{7}\right)^2 = \frac{3161}{49}$$

28)  $x^2 + y^2 - 10x + 20y + 61 = 0$

Translated 1 left, 2 down

$$(x - 4)^2 + (y + 12)^2 = 64$$

30)  $4y + y^2 = -28x - x^2 - 191$

Translated 4 right

$$(x + 10)^2 + (y + 2)^2 = 9$$