

Semester 2 Review

**UNIT 3.2 FUNCTION NOTATION**

**Write the equation for each function with the following transformations.**

1) A quadratic function that is vertically compressed by a factor of  $\frac{1}{3}$  transformed 2 units to the right and 4 units down.

2) An absolute value function that is vertically stretched by a factor of 2, transformed 3 units to the left and 1 unit up.

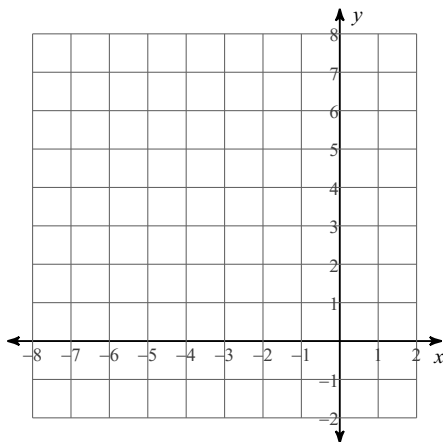
**Without graphing, state the shape and list the transformations of each function.**

3)  $y = -|x - 1| + 1$

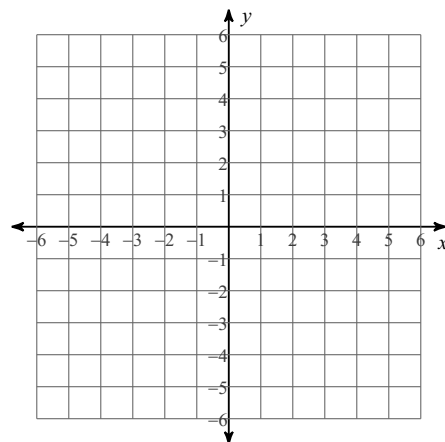
4)  $y = 2(x + 3)^2 - 2$

**Graph each function. List vertex, domain and range.**

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

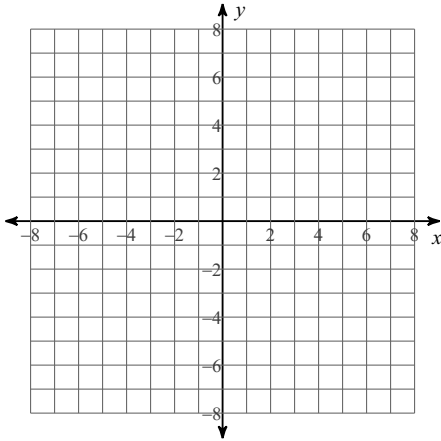


6)  $y = -|x - 1| + 2$

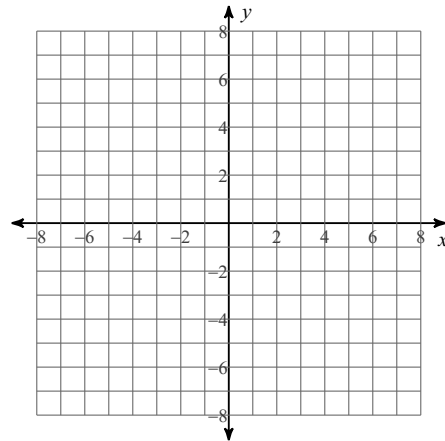


**Graph the following piecewise functions.**

$$7) f(x) = \begin{cases} 2x + 1, & x \leq 1 \\ (x - 3)^2, & x > 1 \end{cases}$$



$$8) f(x) = \begin{cases} -|x + 1| + 3, & x < 0 \\ -2(x - 1)^2 + 2, & x \geq 0 \end{cases}$$



**Perform the indicated operation.**

$$9) \begin{aligned} g(n) &= -2n - 4 \\ f(n) &= 2n^2 + 5n \\ \text{Find } (g \circ f)(n) \end{aligned}$$

$$10) \begin{aligned} g(x) &= x^3 - 3 \\ f(x) &= -x + 3 \\ \text{Find } (g + f)(x) \end{aligned}$$

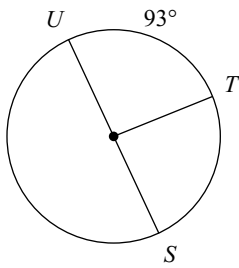
$$11) \begin{aligned} f(x) &= 2x - 3 \\ g(x) &= -2x^2 + 5 - 2x \\ \text{Find } (f - g)(9) \end{aligned}$$

$$12) \begin{aligned} g(n) &= 2n - 5 \\ h(n) &= n - 4 \\ \text{Find } (g \cdot h)(3) \end{aligned}$$

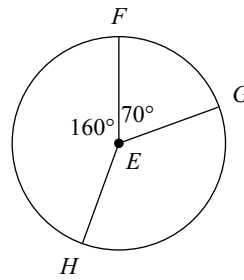
**UNIT 4.2 CIRCLES**

**Find the measure of the arc or angle indicated.**

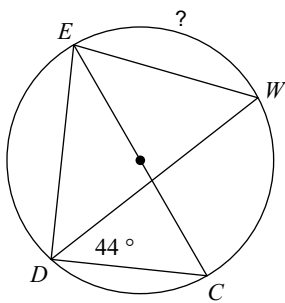
13)  $m\widehat{SUT}$



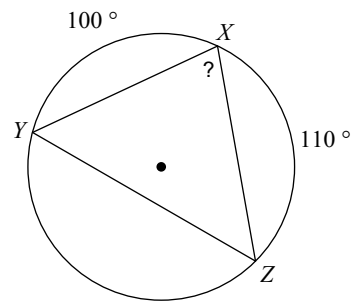
14)  $m\angle GEH$



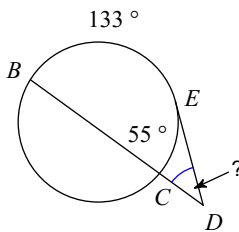
15)



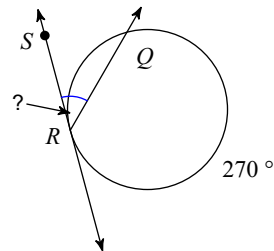
16)



17)

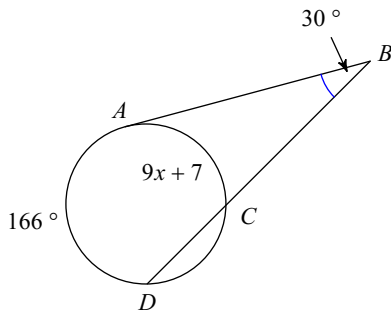


18)

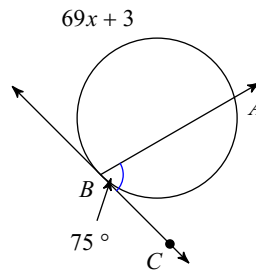


**Solve for x. Assume that lines which appear tangent are tangent.**

19)



20)



Convert each degree measure into radians.

21)  $225^\circ$

22)  $120^\circ$

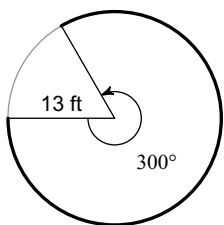
Convert each radian measure into degrees.

23)  $\frac{\pi}{4}$

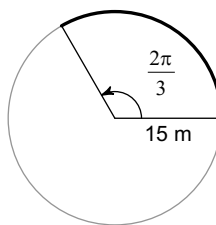
24)  $\frac{5\pi}{6}$

Find the length of each arc. Write answers in exact and approximate forms.

25)

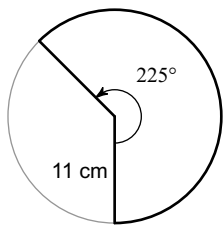


26)

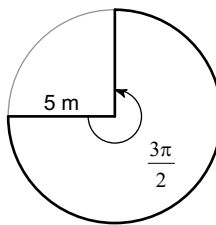


Find the area of each sector. Write answers in exact and approximate forms.

27)

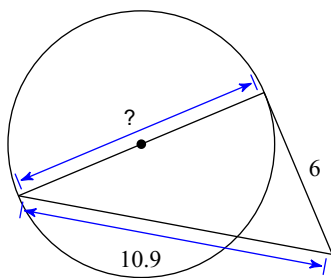


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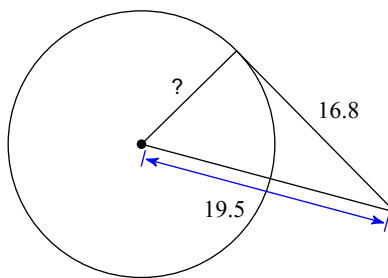


Find the segment length indicated. Assume that lines which appear to be tangent are tangent.

29)



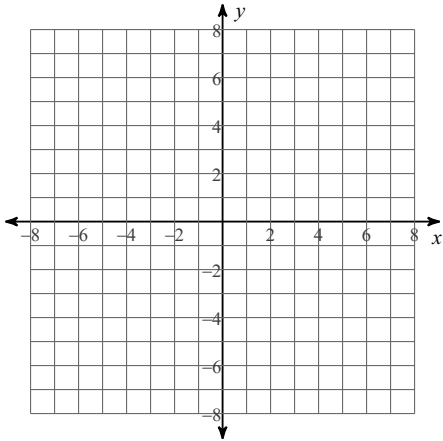
30)



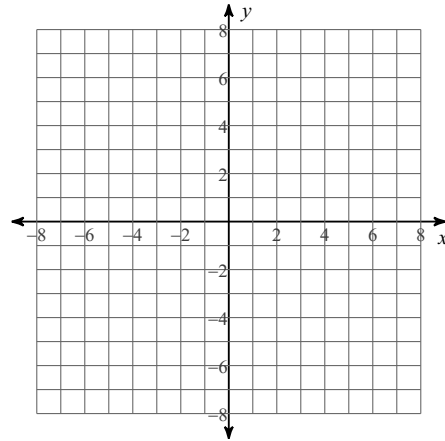
## UNIT 4.3 SYSTEMS & CONICS

Identify the center and radius of each. Then sketch the graph.

31)  $(x - 4)^2 + (y + 2)^2 = 6$



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

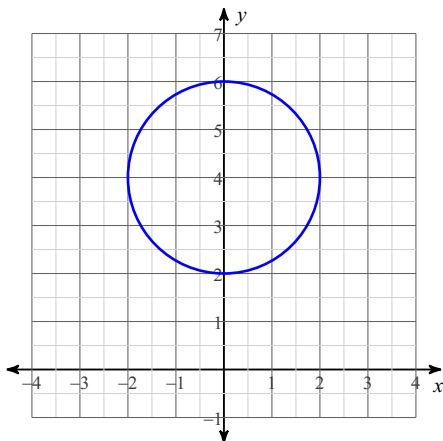


Use the information provided to write the equation of each circle.

33) Center:  $(15, -10)$   
Radius:  $\sqrt{7}$

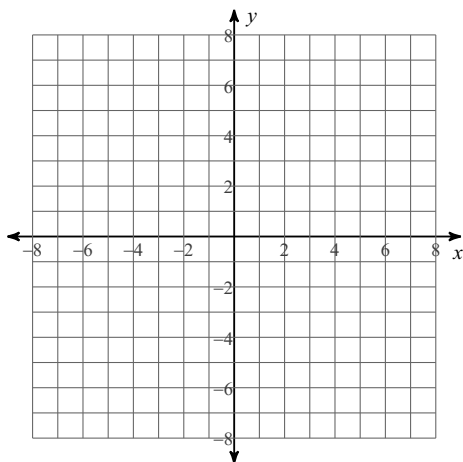
34) Center:  $(15, -6)$   
Point on Circle:  $(11, -6)$

35)

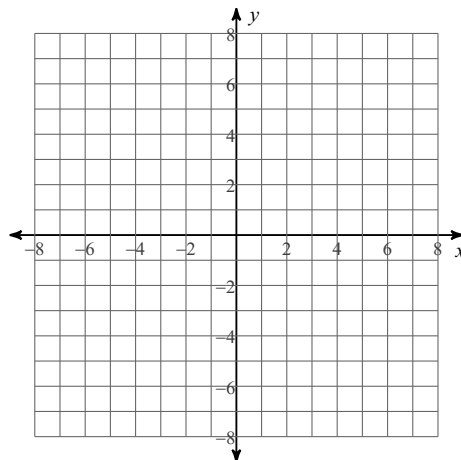


Solve the following systems by graphing.

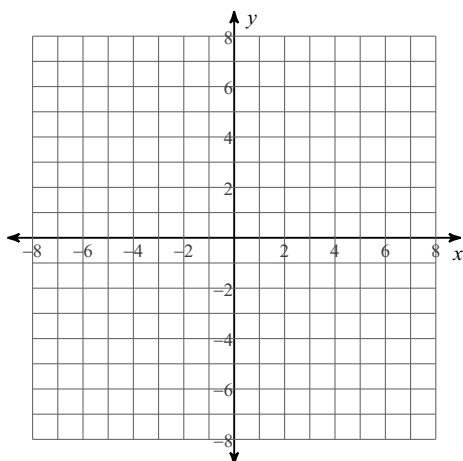
36)  $y = -(x + 3)^2 + 6$   
 $y = x + 7$



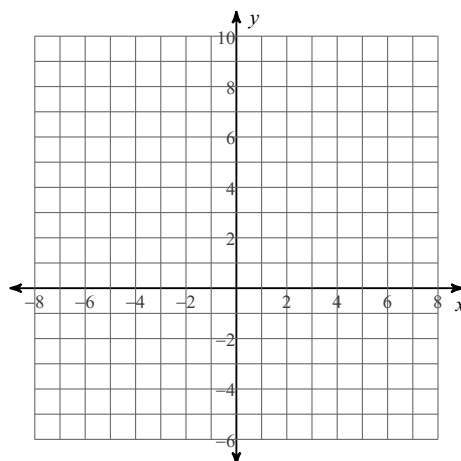
37)  $y = 2$   
 $y = 3x - 4$



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



39)  $y = x^2 - 4x + 7$   
 $y = x + 1$



Solve each system by substitution.

40)  $y = -8$   
 $-4x + 5y = -24$

41)  $7x + 6y = 13$   
 $y = -6x - 22$

42)  $y = x^2 - x - 12$   
 $y = x + 3$

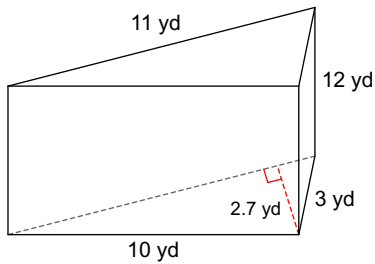
43)  $x^2 + (y + 2)^2 = 130$   
 $x = 9$

- 44) Jennifer and Shayna each improved their yards by planting daylilies and shrubs. Jennifer spent \$81 on 7 daylilies and 1 shrub. Shayna spent \$217 on 14 daylilies and 7 shrubs. What is the cost of one daylily and the cost of one shrub?

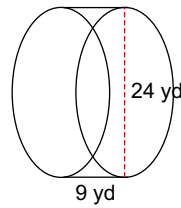
### UNIT 4.4 VOLUME

Find the volume of each figure. Round your answers to the nearest tenth, if necessary.

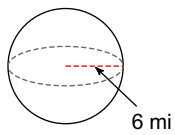
45)



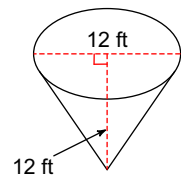
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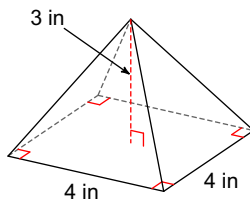
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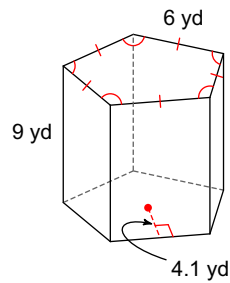
48)



49)



50)



**Answer each of the following volume questions. Draw a picture, if necessary.**

51) A sphere has a volume of  $250\text{cm}^3$ . What is the radius of the sphere?

52) The volume of a cylinder is  $307.72\text{cm}^3$  and has a radius of  $2\text{cm}$ . What is the height?

53) The volume of the pyramid at the Louvre Museum is  $256.7\text{m}^3$  and has a base area of  $22\text{m}$ . What is the height?

54) The volume of a cereal box is  $217.5\text{in}^3$ . The height of the box is  $12\text{in}$  and the width is  $2.5\text{in}$ . What is the length of the box?

### **FACTORING!**

**Factor each completely.**

55)  $p^2 - 14p + 49$

56)  $x^2 + 4x - 45$

57)  $r^2 + 10r + 24$

58)  $k^2 - 6k - 16$

59)  $a^2 - 2a$

60)  $m^2 + 13m + 40$

61)  $3n^2 - 33n + 72$

62)  $n^2 + 5n - 24$

63)  $9k^2 - 4$

64)  $a^2 - 25$