

SM2 Unit 4B Extra Practice

4.3- Identify the vertex of each function. Describe your process.

1) $f(x) = \frac{1}{2}(x + 4)^2 - 4$

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

3) $y = |x + 7| - 1$

4) $f(x) = -2|x - 3| - 1$

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

6) $y = -\frac{1}{3}(x - 2)^2 + 4$

7) $g(x) = \frac{1}{3}|x + 2| + 9$

8) $h(x) = 4|x - 8| + 5$

Explain how each graph below has been shifted and/or stretched from the function $y = x^2$.

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

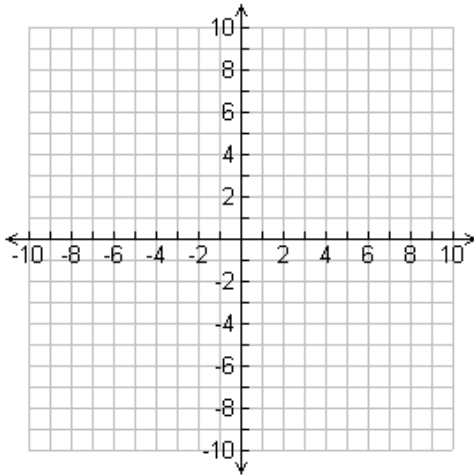
10) $f(x) = 2(x - 3)^2 - 3$

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

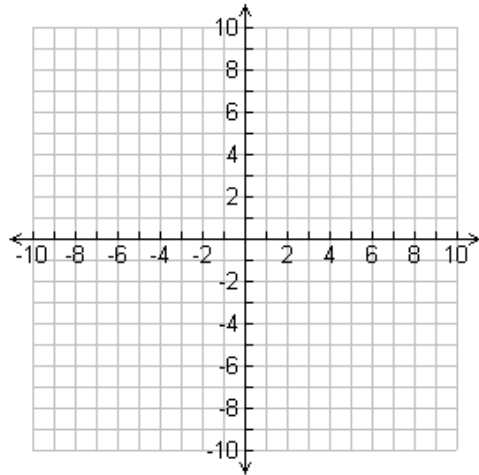
12) $y = \frac{1}{2}(x + 3)^2 + 1$

Sketch the graph of each function.

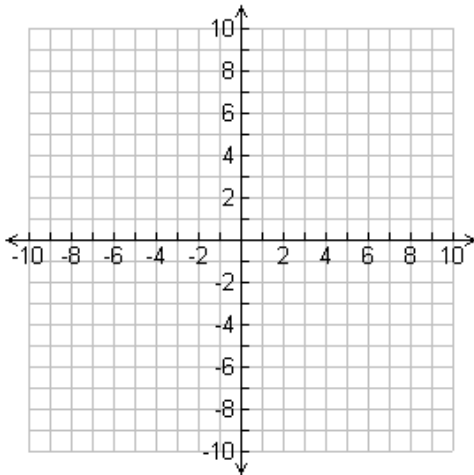
13) $y = 3(x - 1)^2 - 1$



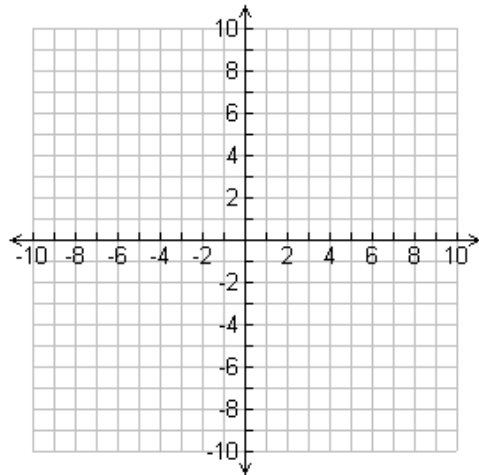
14) $f(x) = -2(x + 2)^2 + 4$



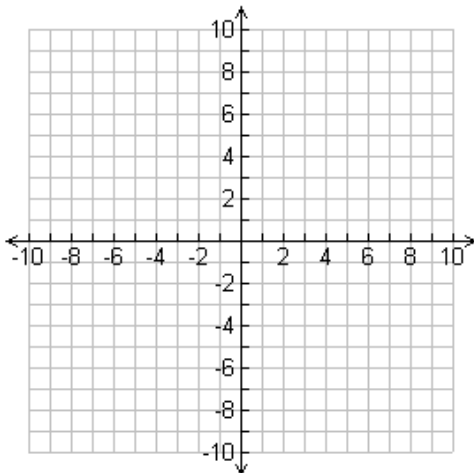
15) $y = |x + 7| - 1$



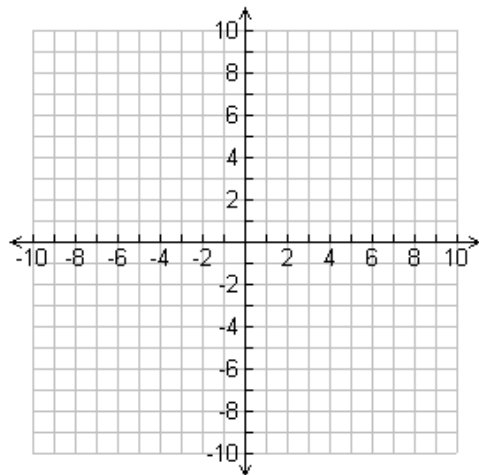
16) $f(x) = -2|x - 3| - 1$



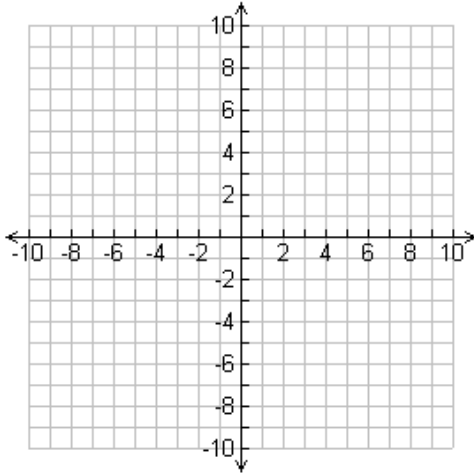
17) $y = -\frac{1}{2}(x + 2)^2 + 1$



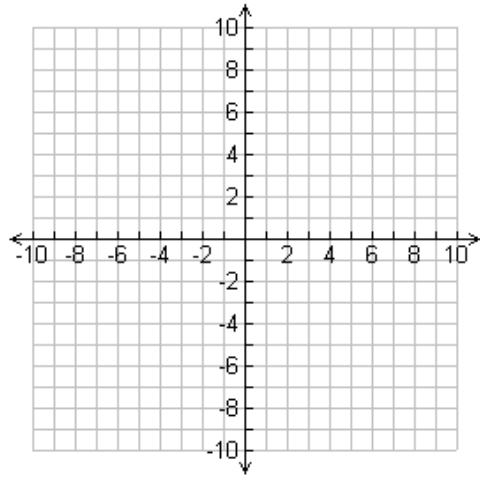
18) $y = (x - 1)^2 + 3$



19) $g(x) = \frac{1}{3}|x + 2| + 6$



20) $h(x) = 4|x - 2| + 5$



4.4- Identify the center and radius of each. Explained how you identified the center and radius.

21) $(x - 1)^2 + (y - 4)^2 = 144$

22) $(x + 6)^2 + (y - 11)^2 = 41$

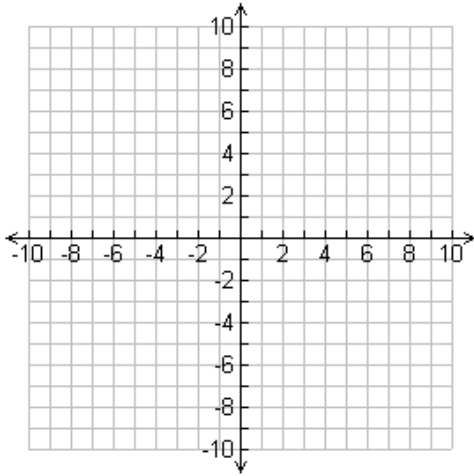
23) $(x + 14)^2 + (y - 1)^2 = 9$

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

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

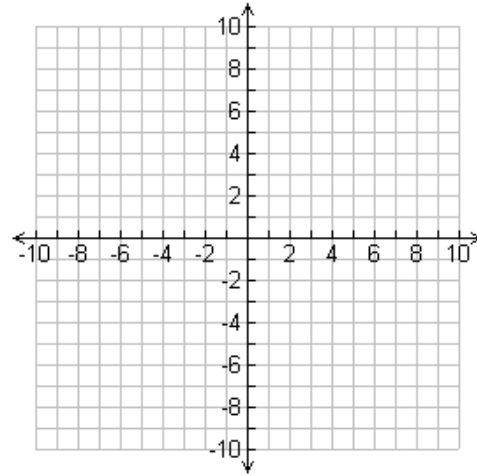
25) $(x + 2)^2 + (y + 3)^2 = 16$

Center:
Radius:



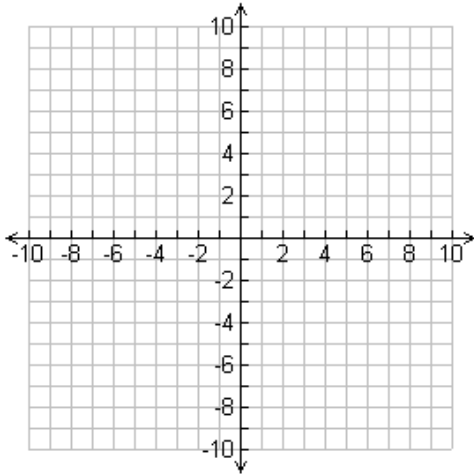
26) $(x + 4)^2 + (y + 3)^2 = 4$

Center:
Radius:



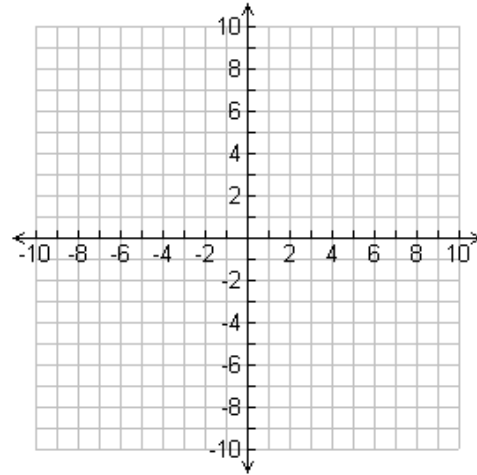
27) $(x - 3)^2 + (y + 3)^2 = 11$

Center:
Radius:



28) $(x + 3)^2 + (y + 1)^2 = 9$

Center:
Radius:

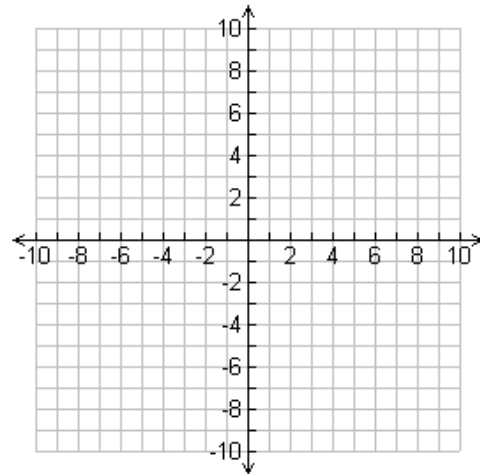


4.5- Graph the piecewise functions. Determine the domain and range of each function.

29)
$$y = \begin{cases} 2|x + 5|, & \text{if } x < -1 \\ \frac{1}{2}x + 5, & \text{if } x > -1 \end{cases}$$

Domain:

Range:



30)
$$y = \begin{cases} -2x + 7, & \text{if } x \leq 0 \\ (x - 3)^2 + 1, & \text{if } x > 1 \end{cases}$$

Domain:

Range:

