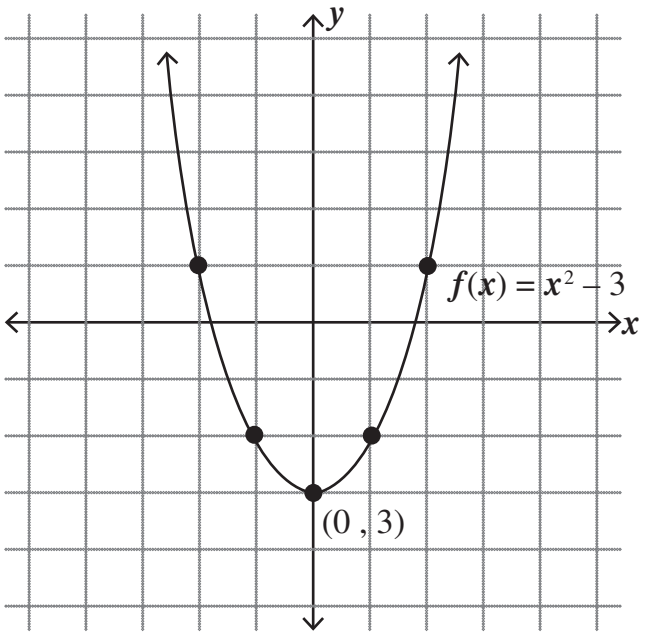
Domain and Range

If we want to find the domain and range of a graph of an equation, we need to remember that the set of all ***x***-coordinates is called the **domain** , while the set of all ***y***-coordinates is called the **range** of the equation.

We need to look from left to right on the ***x***-axis to determine the domain and from the bottom to top on the ***y***-axis to determine the range.

Example: Find the domain and range of the graph.



Answer:

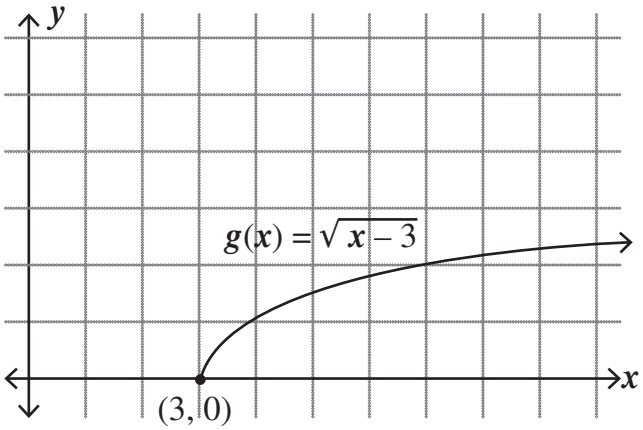
To find the domain we need to determine the ***x***-values on the graph. If we visualize that the parabola gets infinitely wider from left to right, we can see that the graph will go to negative infinity to the left and to positive infinity on the right. When writing the domain in interval notation, write the smaller value first.

Domain: ($-\infty$, ∞)

To find the range we need to determine the ***y***-values on the graph. If we visualize that the parabola gets infinitely "taller," we can see that the ***y***-values on the graph start at -3 (the lowest point of the graph) and go to positive infinity to the top of the graph. When writing the range in interval notation, write the smaller value first.

Range: [-3 , ∞)
Notice that we used a bracket to indicate that -3 is included.

Example: Find the domain and range of the graph.



Answer:

To find the domain we need to determine the ***x***-values on the graph. Notice that the graph begins at 3 on the left and goes to positive infinity on the right. When writing the domain in interval notation, write the smaller value first.

Domain: [3 , ∞)

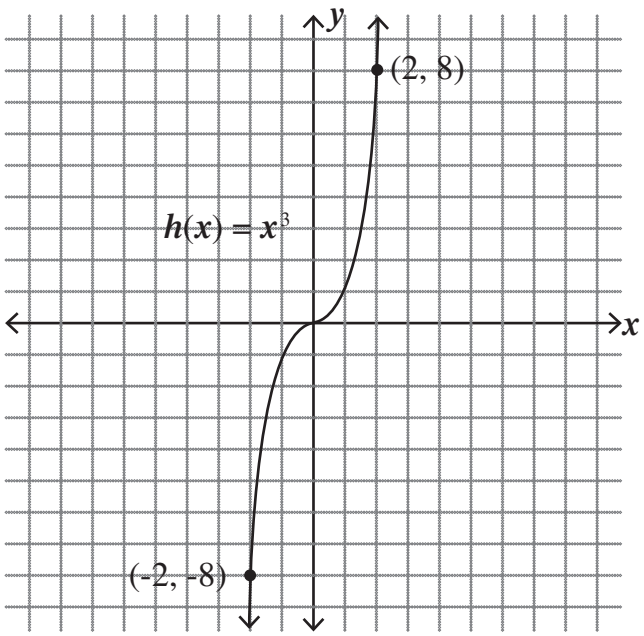
Notice that we used a bracket to indicate that 3 is included.

To find the range we need to determine the ***y***-values on the graph. Notice that the ***y***-values on the graph start at 0 (the lowest point of the graph), and if we visualize that the graph gets infinitely “taller" we can see the ***y***-values go to positive infinity. When writing the range in interval notation, write the smaller value first.

Range: [0 , ∞)

Notice that we used a bracket to indicate that 0 is included.

Example: Find the domain and range of the graph.



Answer:

To find the domain we need to determine the ***x***-values on the graph. Notice that the ***x***-values of the graph go to negative infinity to the left and to positive infinity on the right.

Domain: ($-\infty$, ∞)

To find the range we need to determine the ***y***-values on the graph. Notice that the ***y***-values on the graph go from negative infinity (the lowest point of the graph) and to positive infinity (the top of the graph).

Range: ($-\infty$, ∞)