Horizontal Shifts

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The way that we write this is: $g(x) = f(x - 3)$

Because we first subtract (in the parentheses) then compute the squaring function $f(x) = x^2$

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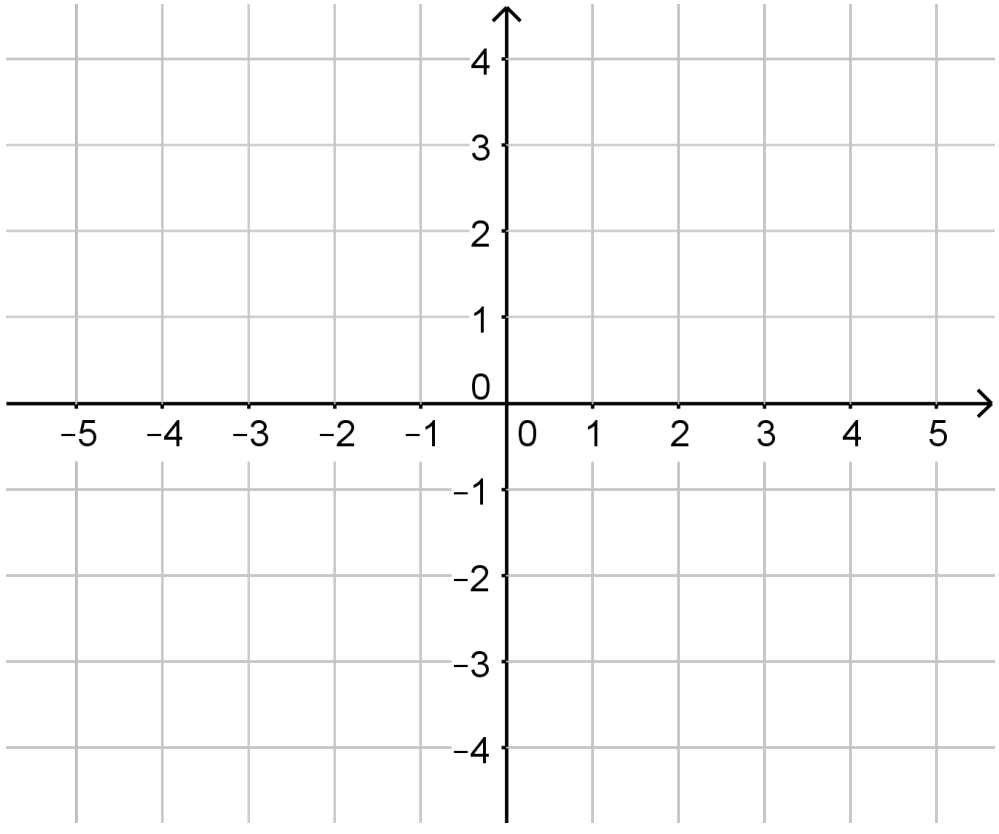

Horizontal Shifts

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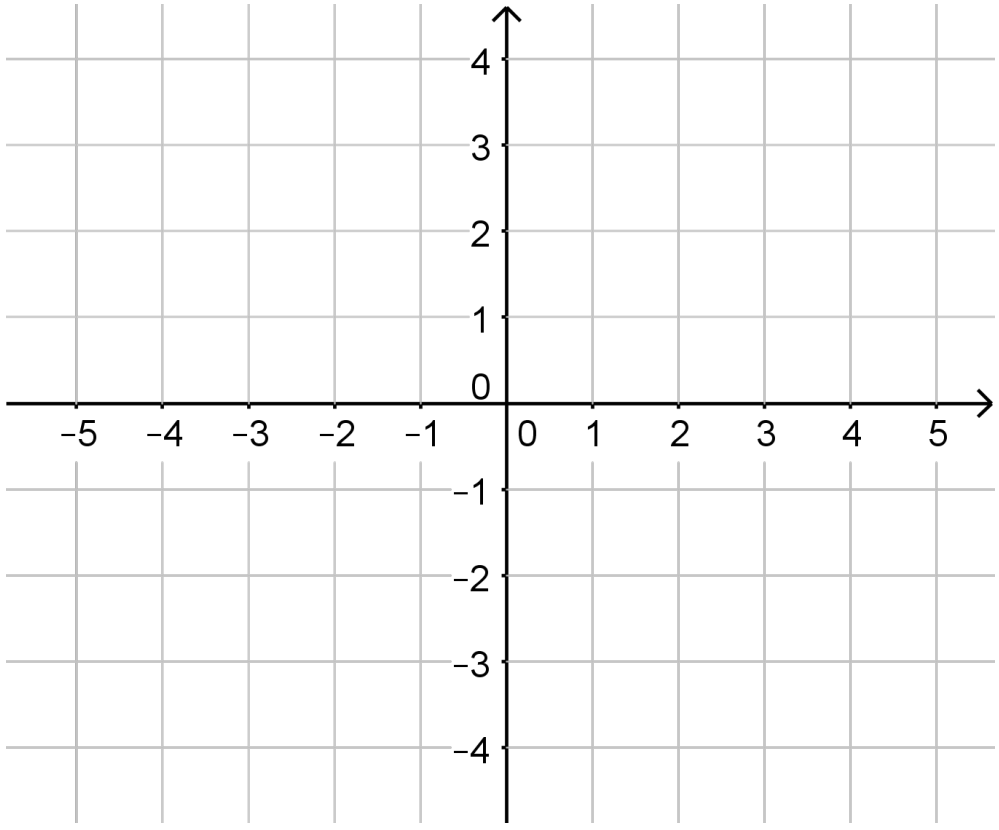
We will sketch the graph of $g(x) = (x - 3)^2$ point-by-point

If $x = 1$

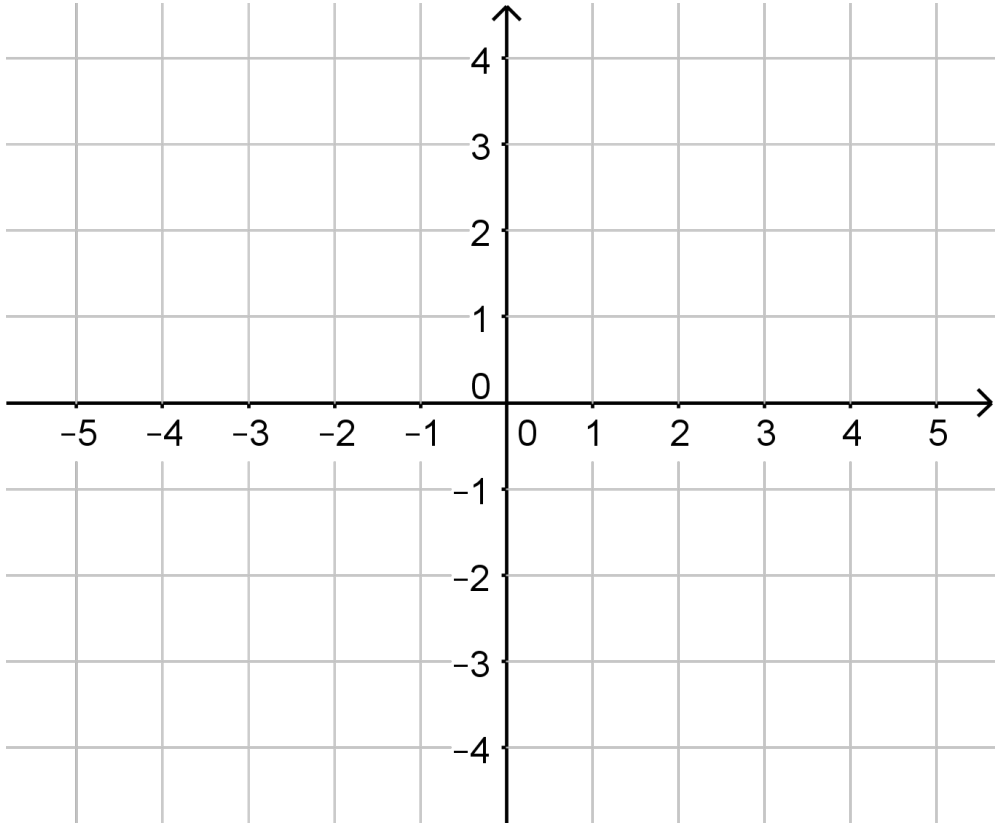


Horizontal Shifts

So, how does subtracting 3 *first* effect the graph of $f(x) = x^2$

We will sketch the graph of $g(x) = (x - 3)^2$ point-by-point

If $x = 1$, then $g(1) = (1 - 3)^2$



Horizontal Shifts

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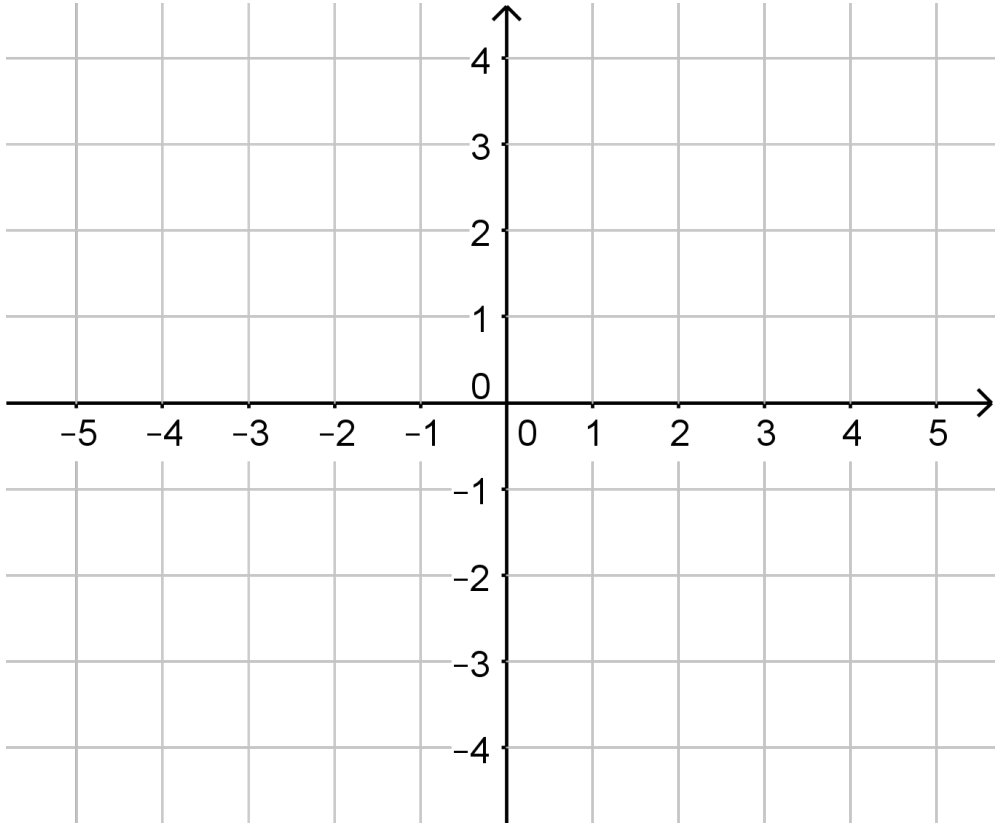
We will sketch the graph of $g(x) = (x - 3)^2$ point-by-point

If $x = 1$, then $g(1) = (1 - 3)^2 = (-2)^2$

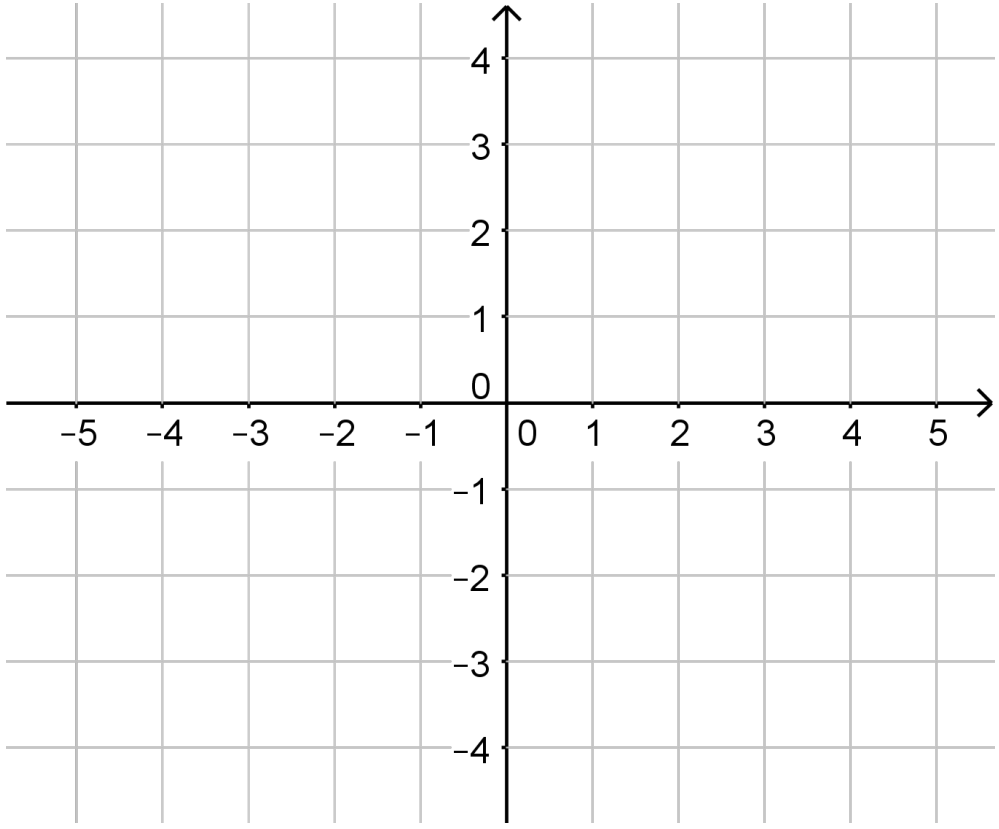


Horizontal Shifts

So, how does subtracting 3 *first* effect the graph of $f(x) = x^2$

We will sketch the graph of $g(x) = (x - 3)^2$ point-by-point

If $x = 1$, then $g(1) = (1 - 3)^2 = (-2)^2 = 4$

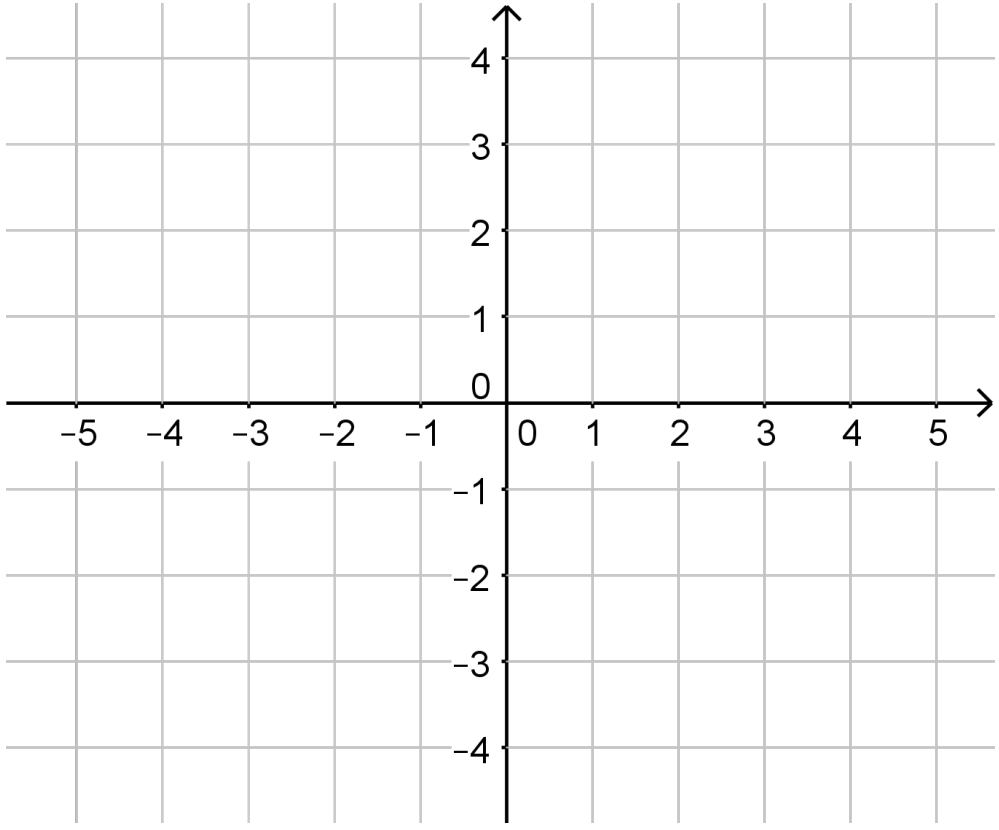


Horizontal Shifts

So, how does subtracting 3 *first* effect the graph of $f(x) = x^2$

We will sketch the graph of $g(x) = (x - 3)^2$ point-by-point

If $x = 1$, then $g(1) = (1 - 3)^2 = (-2)^2 = 4$ so $(1, 4)$ is a point



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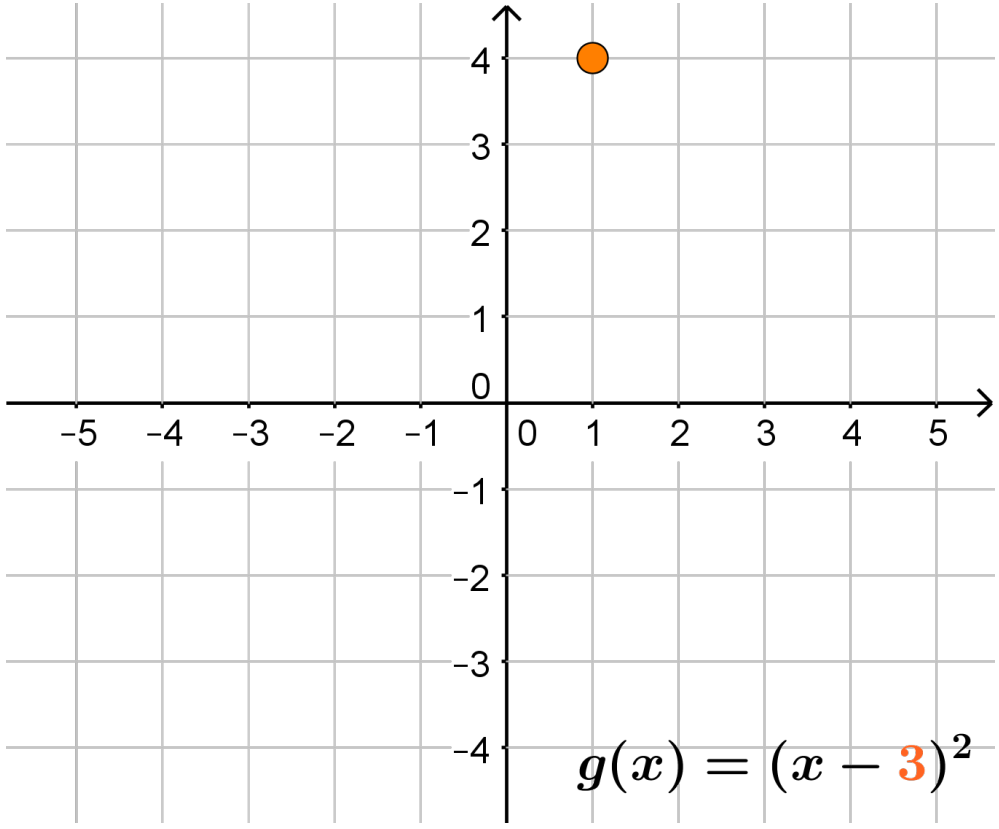

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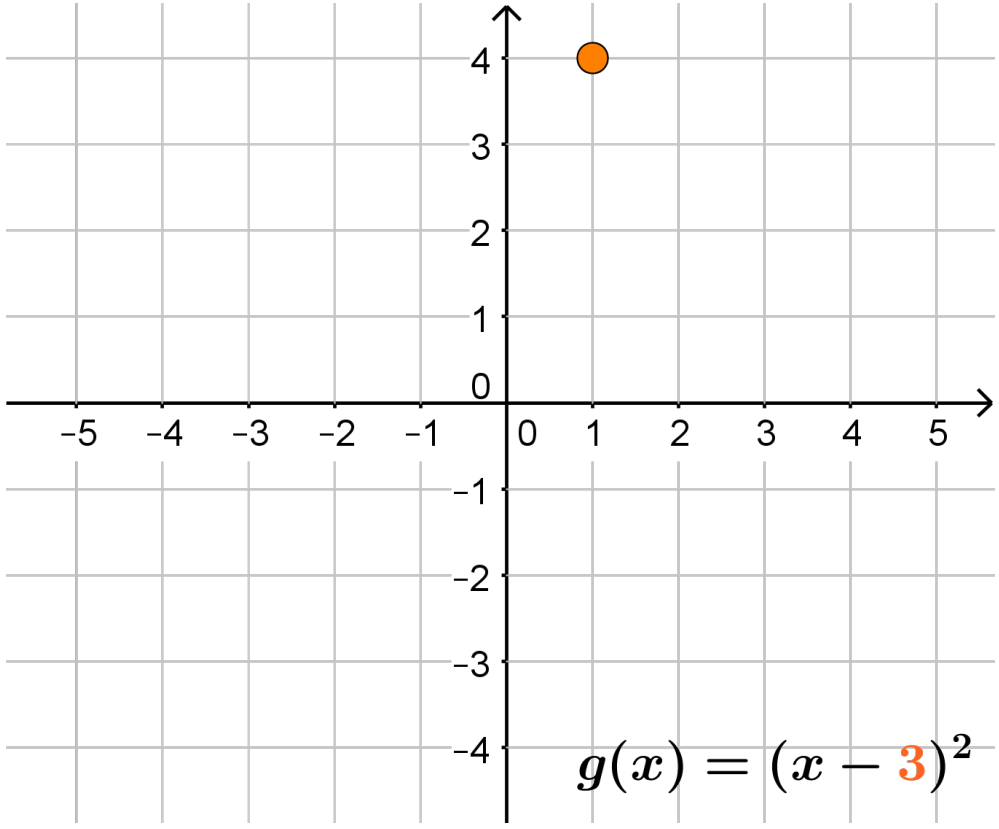
We will sketch the graph of $g(x) = (x-3)^2$ point-by-point

If $x = 1$, then $g(1) = (1-3)^2 = (-2)^2 = 4$ so $(1, 4)$ is a point

If $x = 2$



Horizontal Shifts

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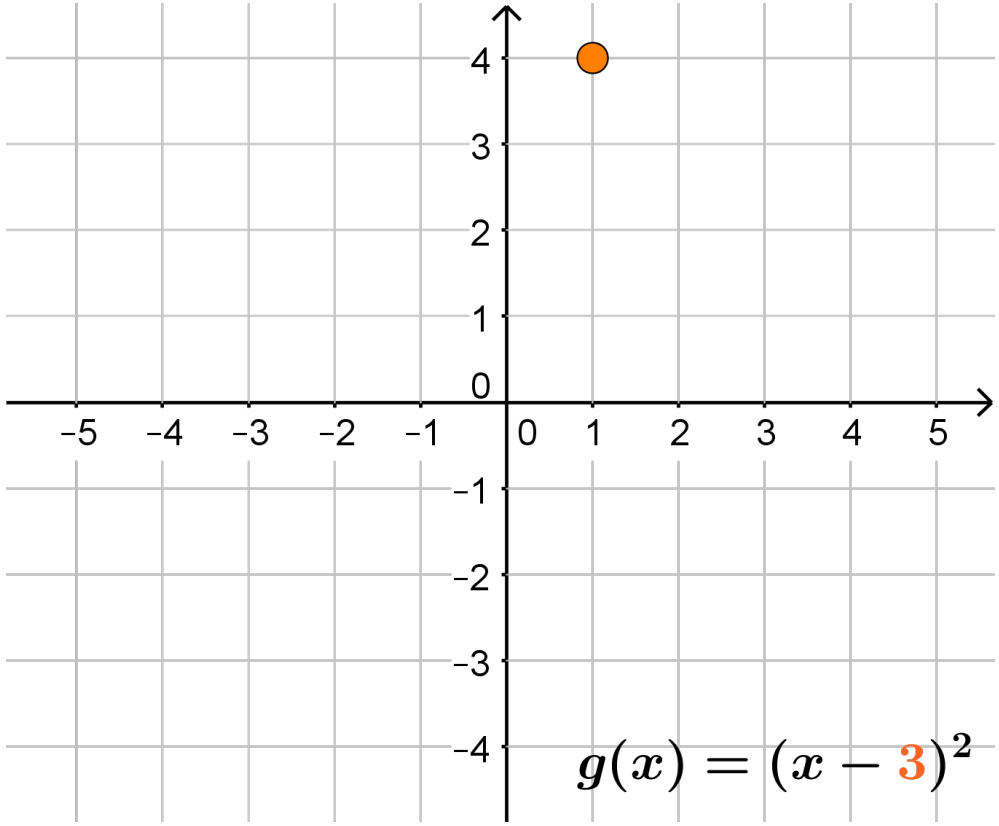
If $x = 1$, then $g(1) = (1-3)^2 = (-2)^2 = 4$ so $(1, 4)$ is a point

If $x = 2$, then $g(2) = (2-3)^2$



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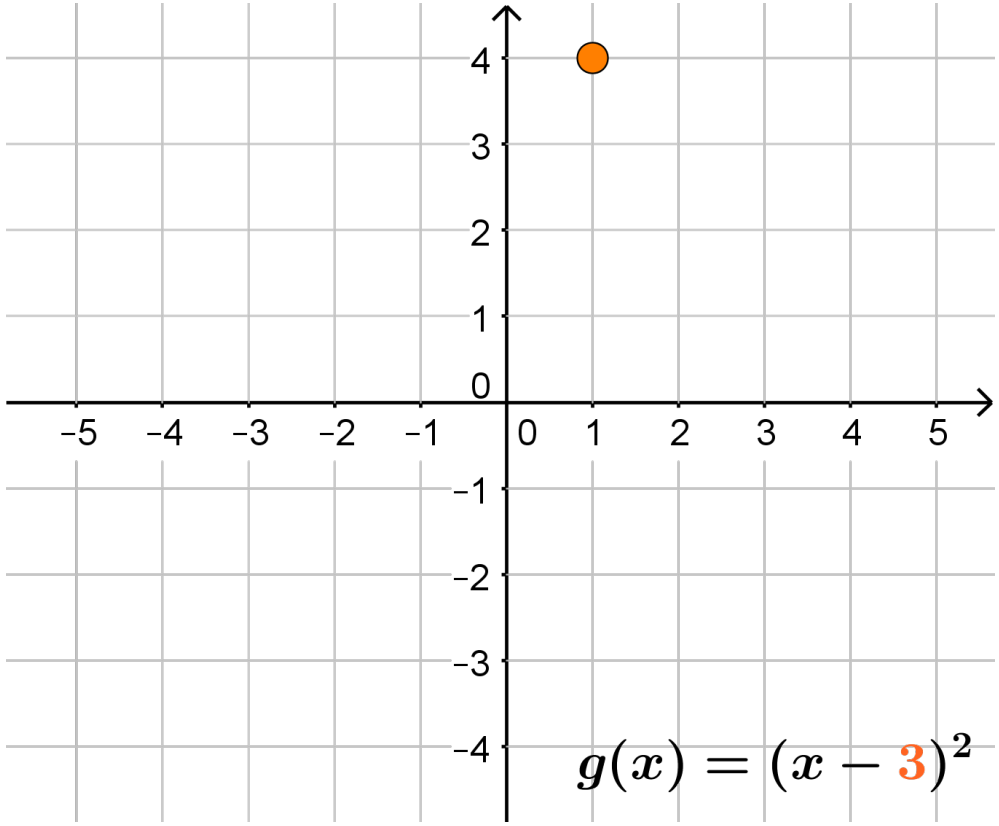
We will sketch the graph of $g(x) = (x-3)^2$ point-by-point

If $x = 1$, then $g(1) = (1-3)^2 = (-2)^2 = 4$ so $(1, 4)$ is a point

If $x = 2$, then $g(2) = (2-3)^2 = (-1)^2$



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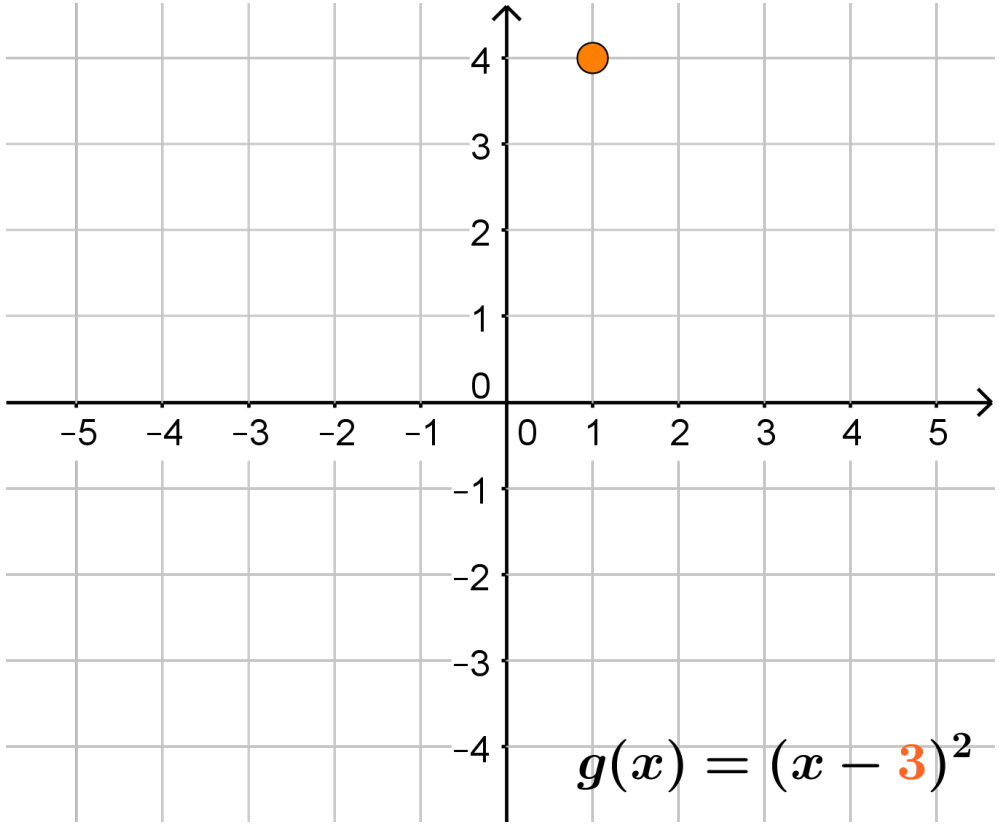

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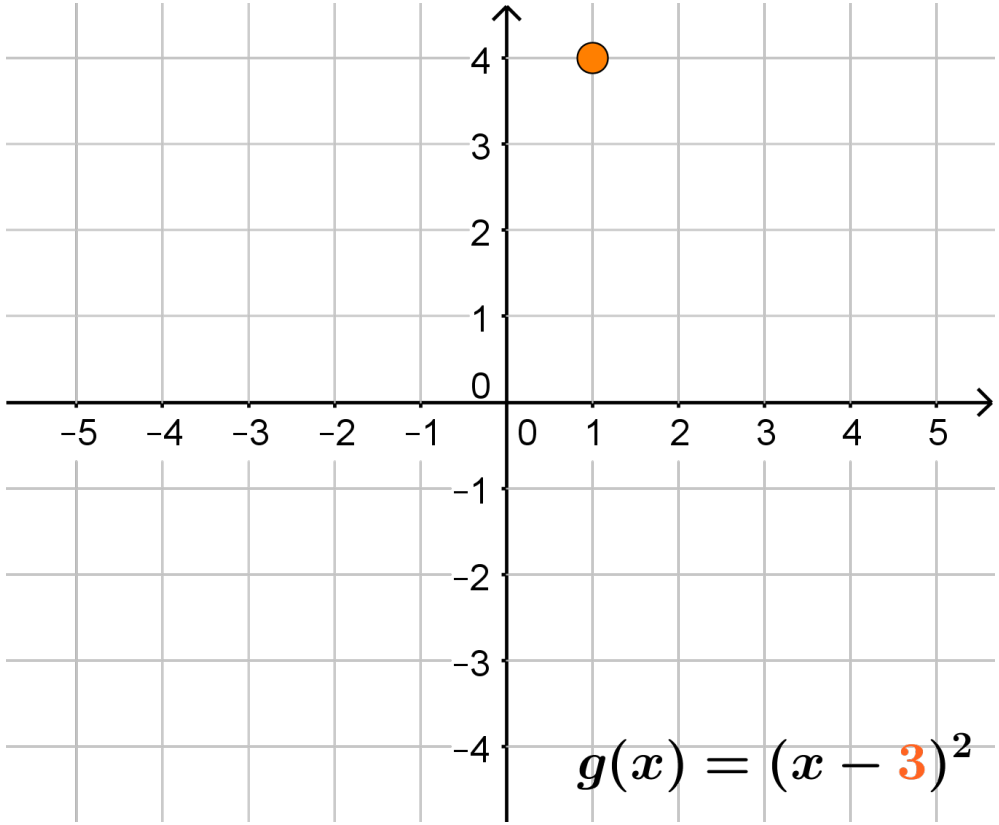
If $x = 2$, then $g(2) = (2-3)^2 = (-1)^2 = 1$ so $(2, 1)$ is a point



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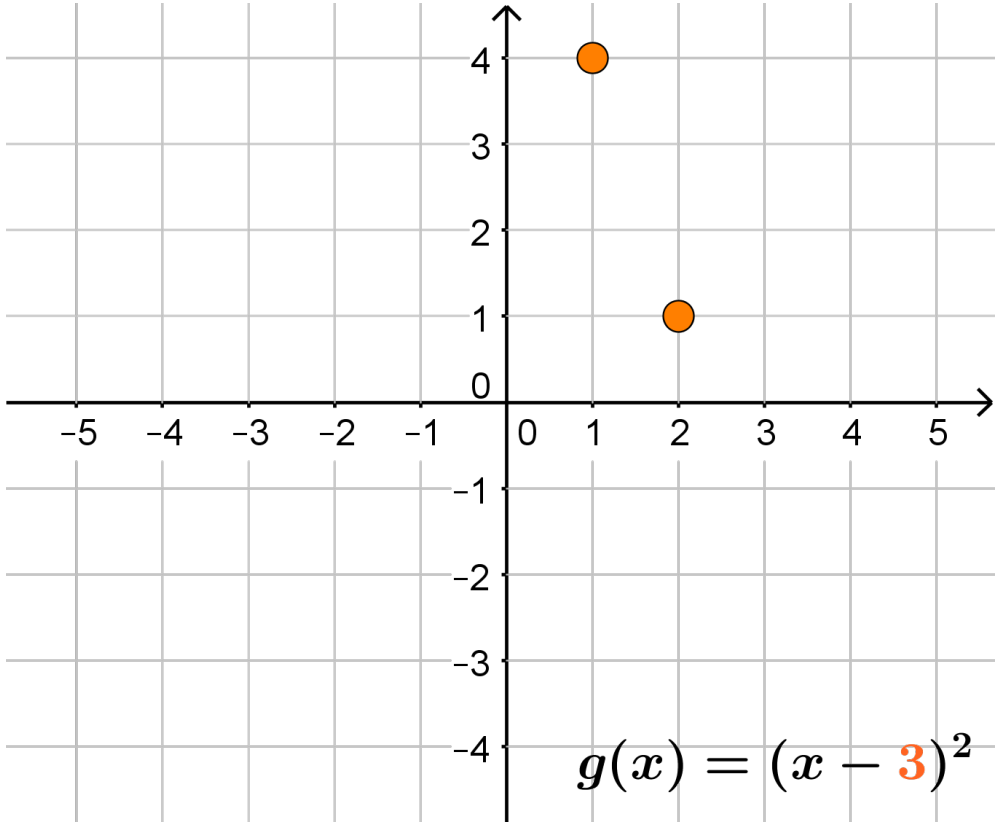

Horizontal Shifts

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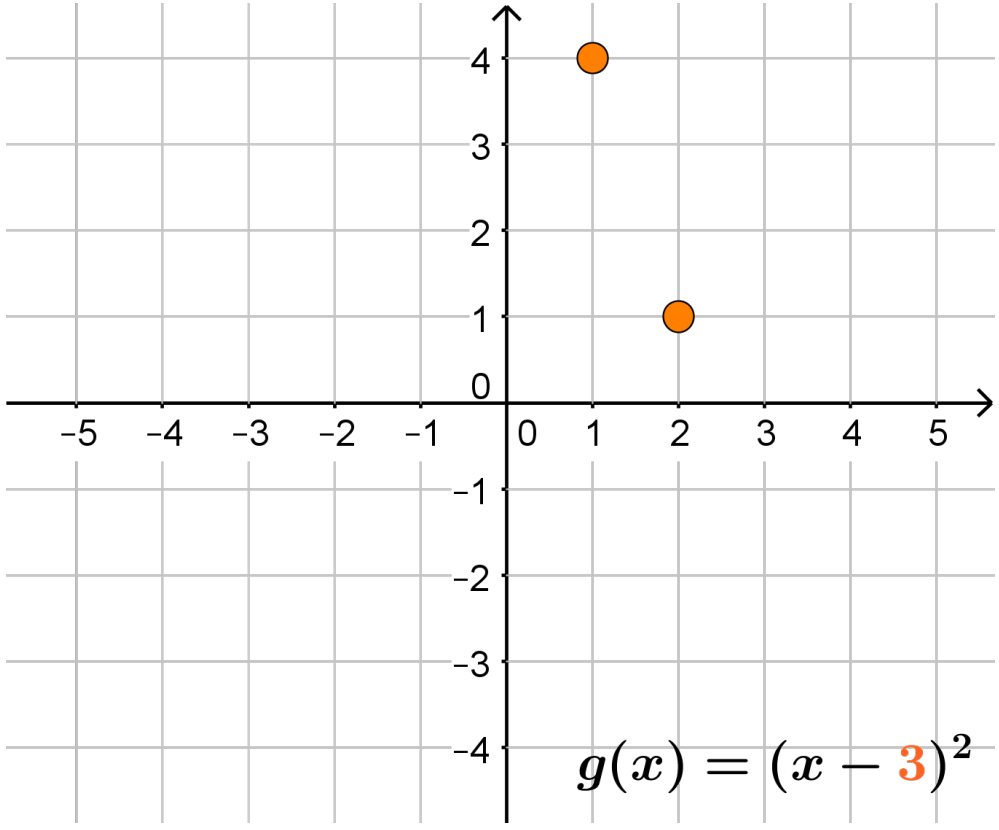
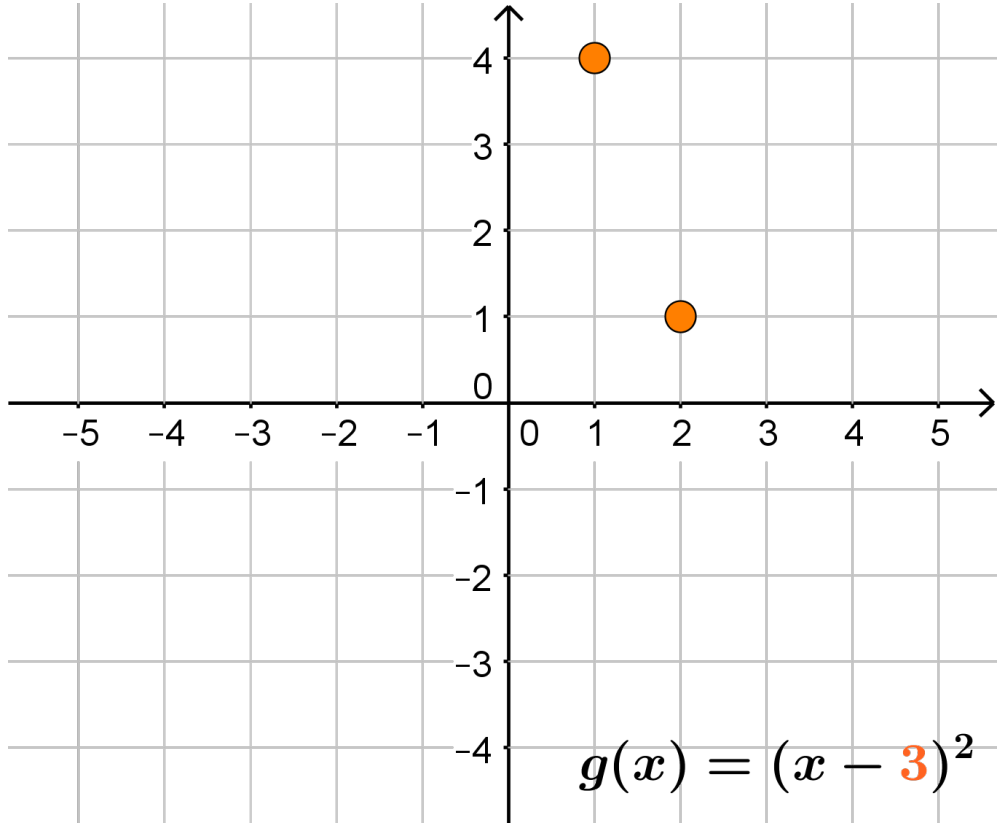
If $x = 3$



Horizontal Shifts

So, how does subtracting 3 *first* effect the graph of $f(x) = x^2$
We will sketch the graph of $g(x) = (x-3)^2$ point-by-point
If $x = 1$, then $g(1) = (1-3)^2 = (-2)^2 = 4$ so $(1, 4)$ is a point
If $x = 2$, then $g(2) = (2-3)^2 = (-1)^2 = 1$ so $(2, 1)$ is a point
If $x = 3$, then $g(3) = (3-3)^2$



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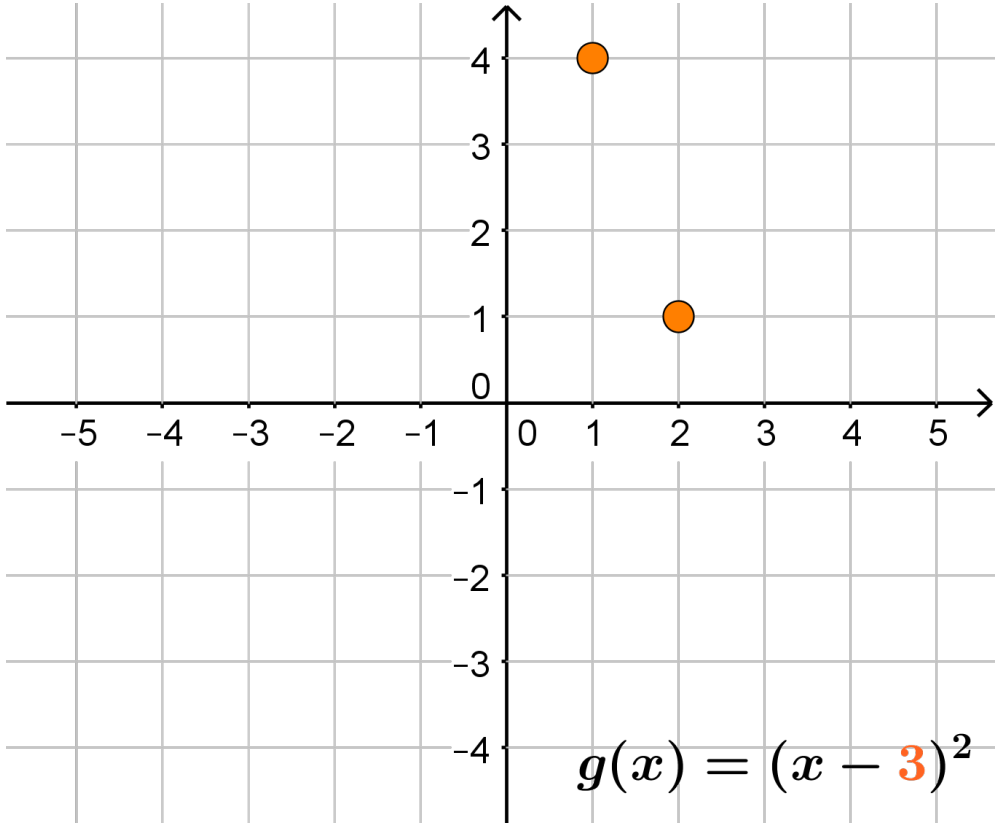

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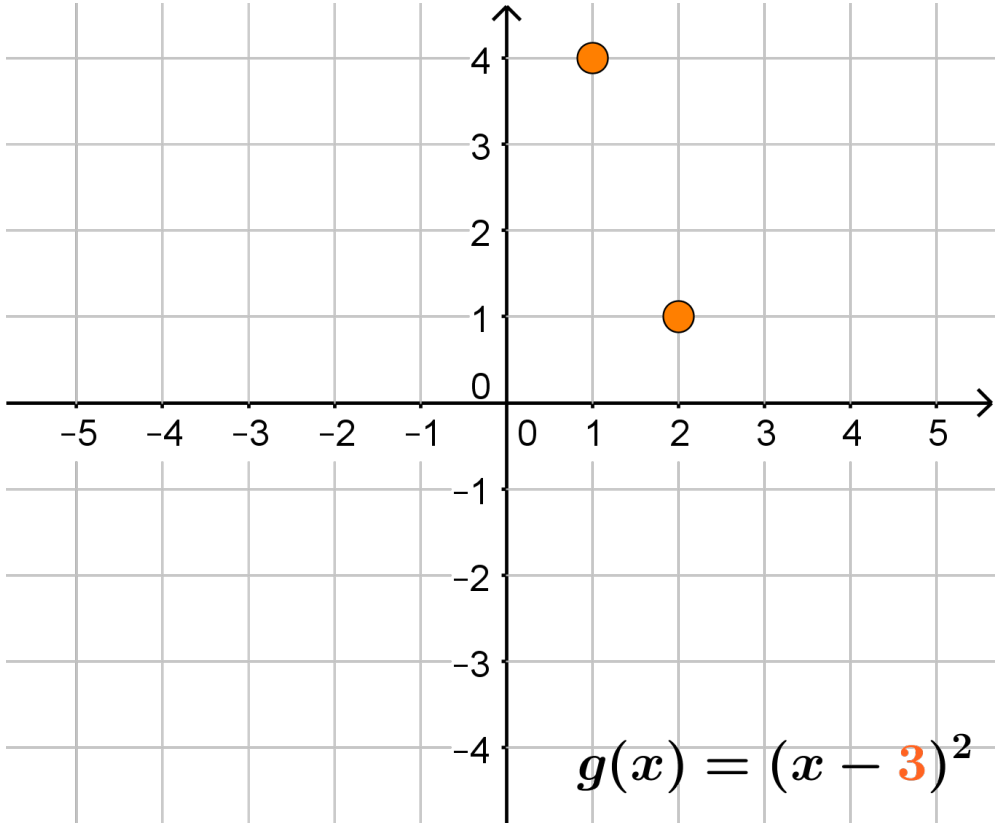

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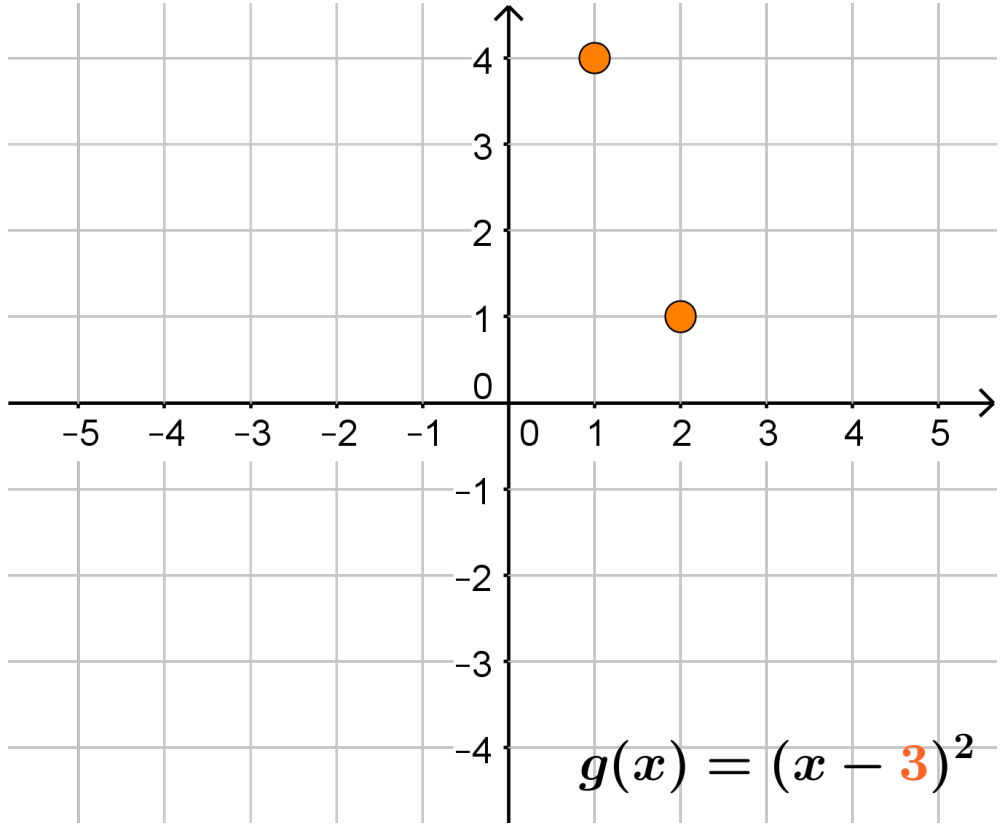

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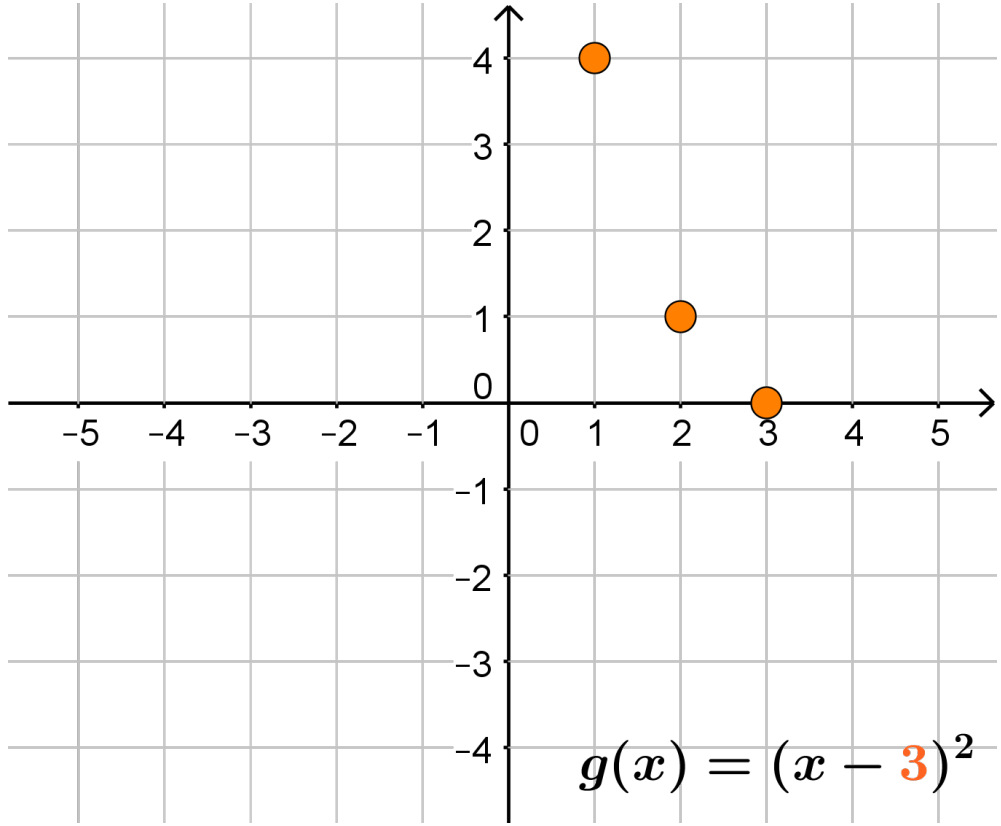

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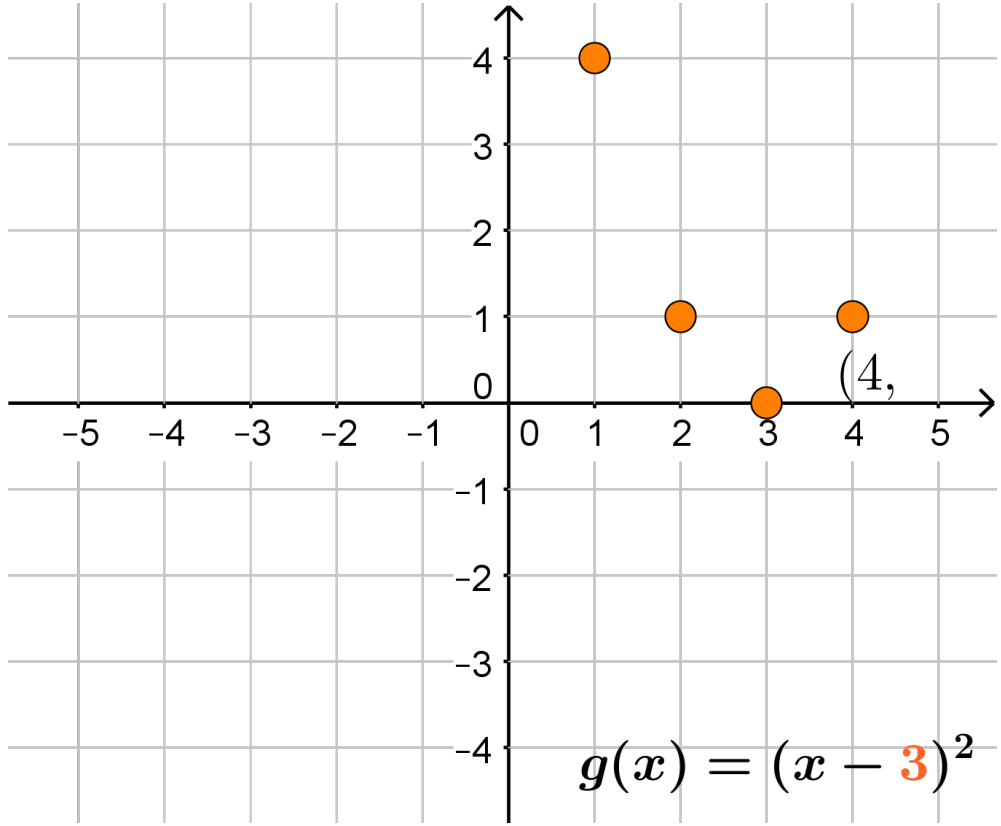

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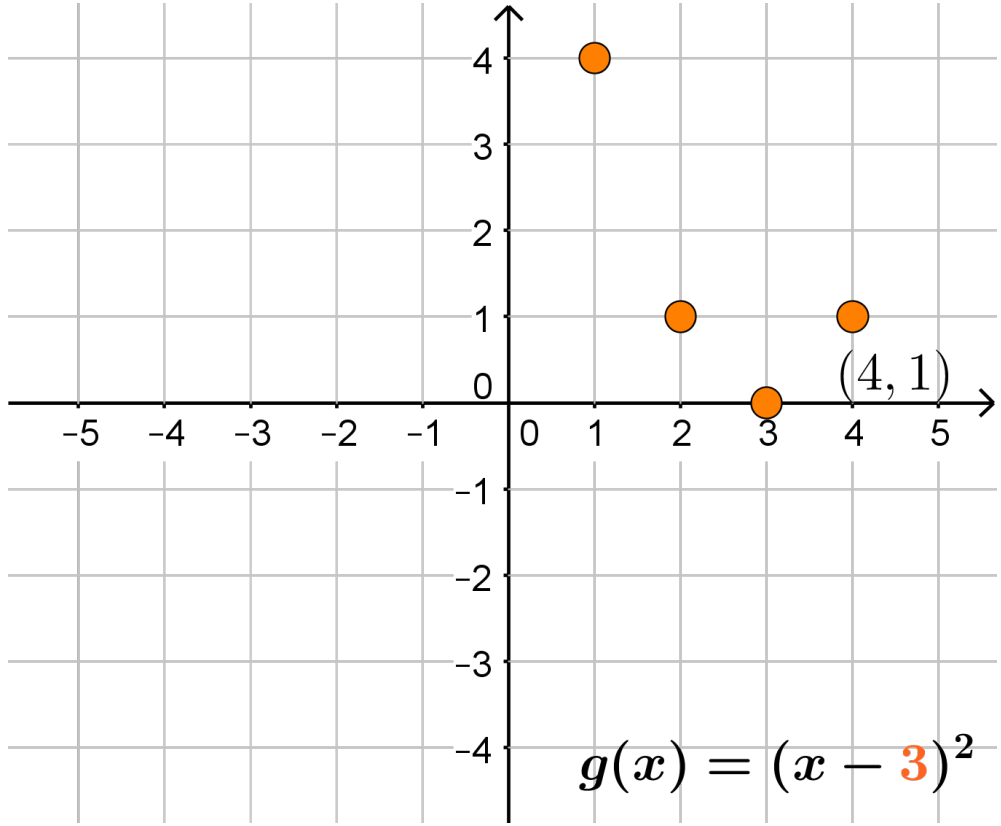

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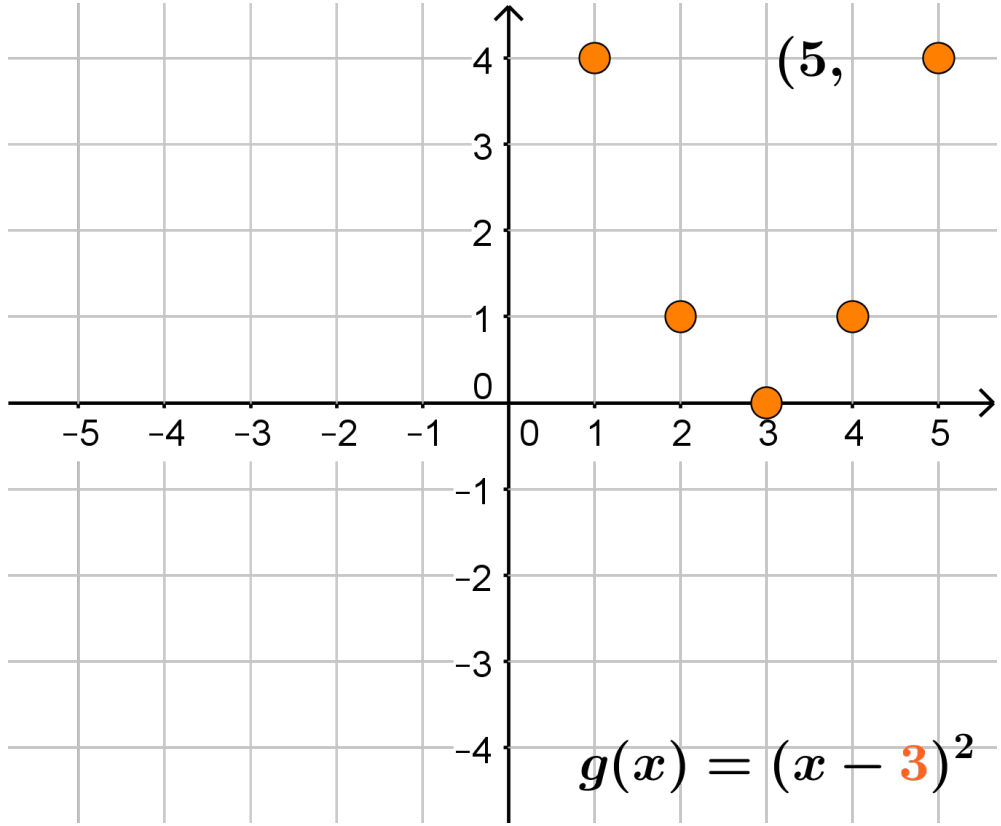

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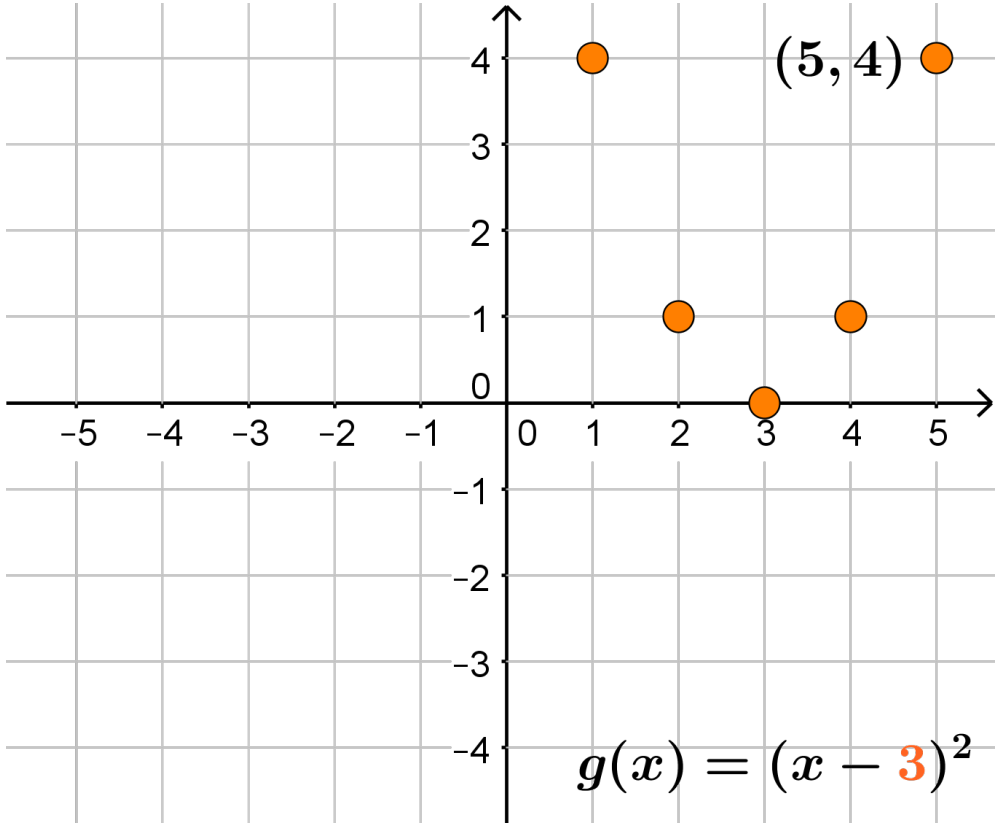

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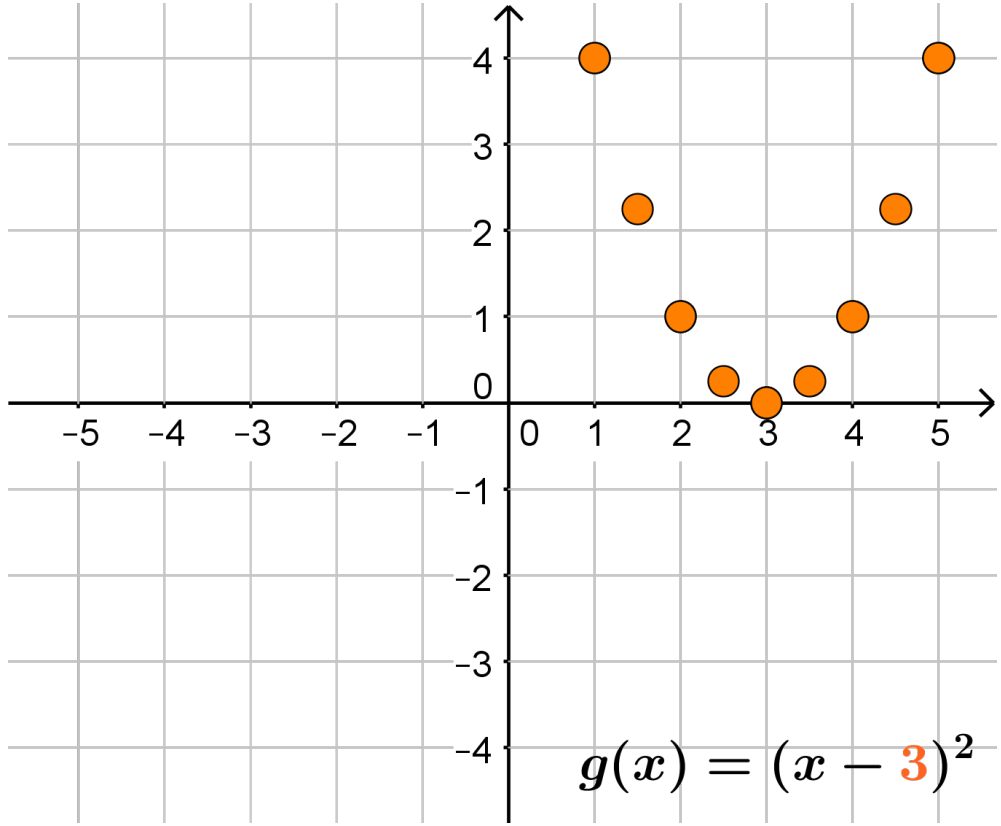

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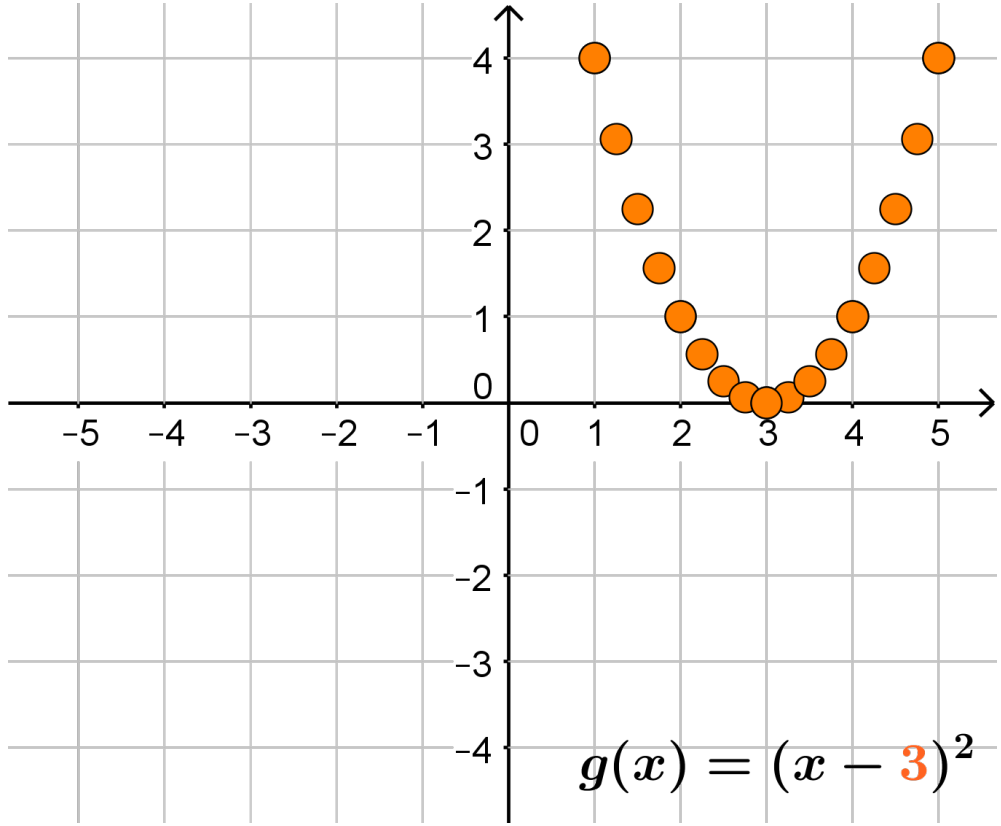

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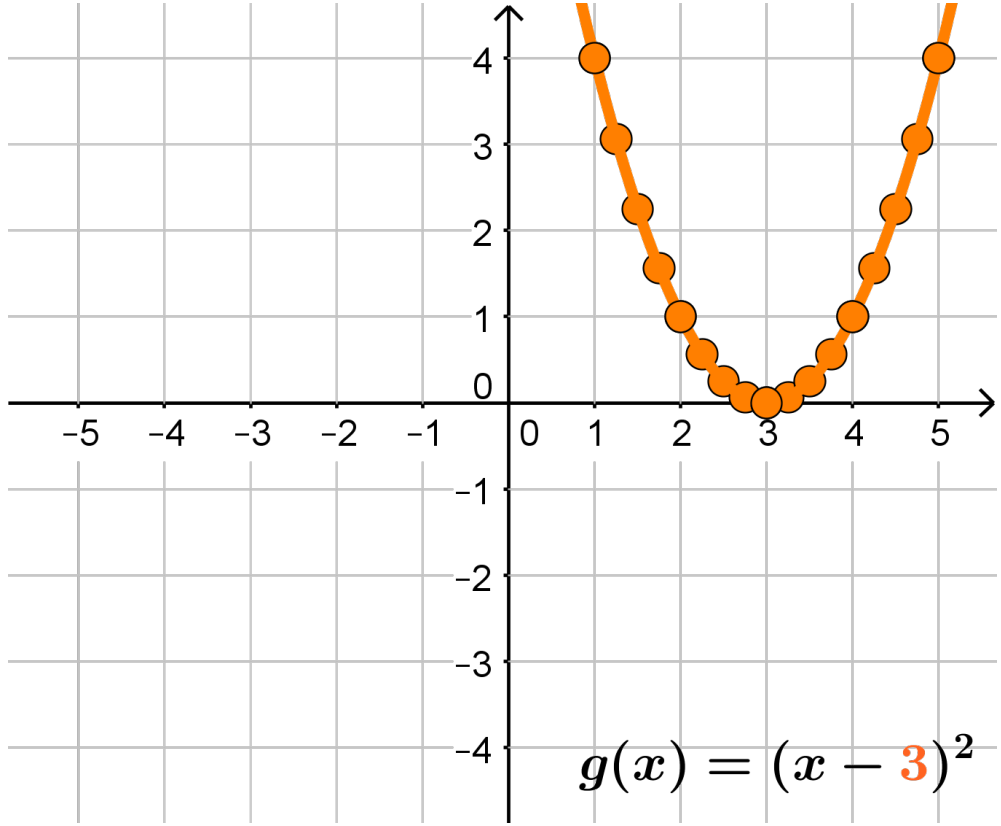


Horizontal Shifts

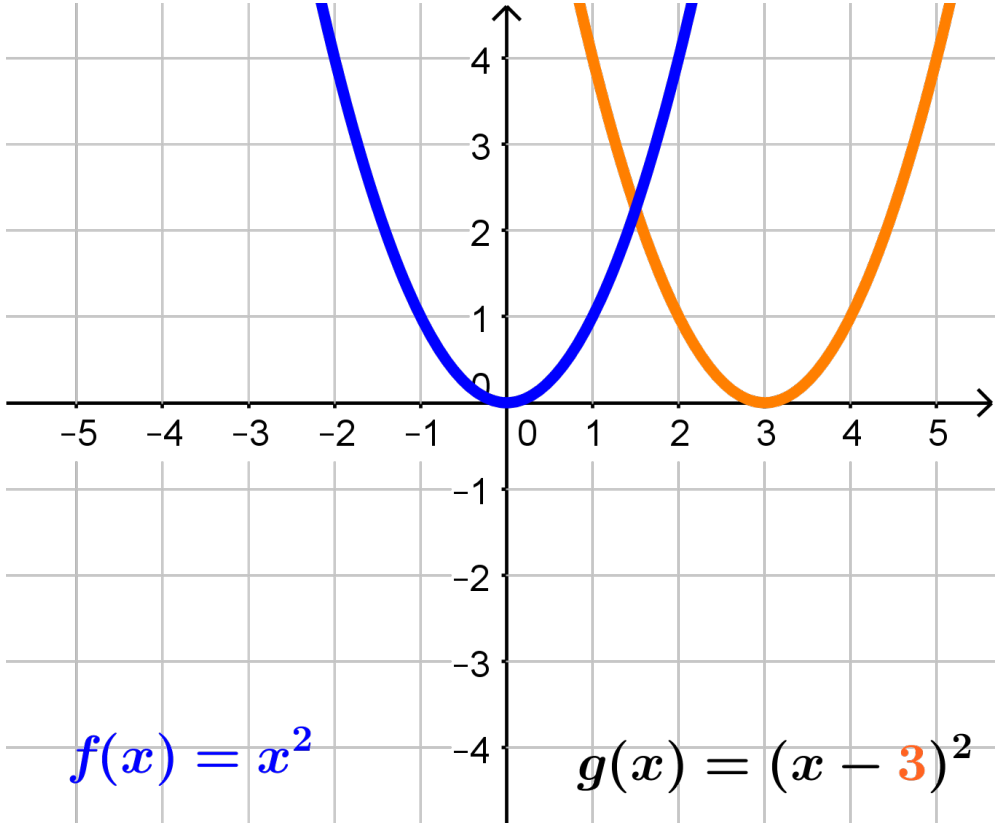
So, how does subtracting 3 *first* effect the graph of $f(x) = x^2$

We will sketch the graph of $g(x) = (x-3)^2$ point-by-point

If $x = 1$, then $g(1) = (1-3)^2 = (-2)^2 = 4$ so $(1, 4)$ is a point

If $x = 2$, then $g(2) = (2-3)^2 = (-1)^2 = 1$ so $(2, 1)$ is a point

If $x = 3$, then $g(3) = (3-3)^2 = (0)^2 = 0$ so $(3, 0)$ is a point



Horizontal Shifts

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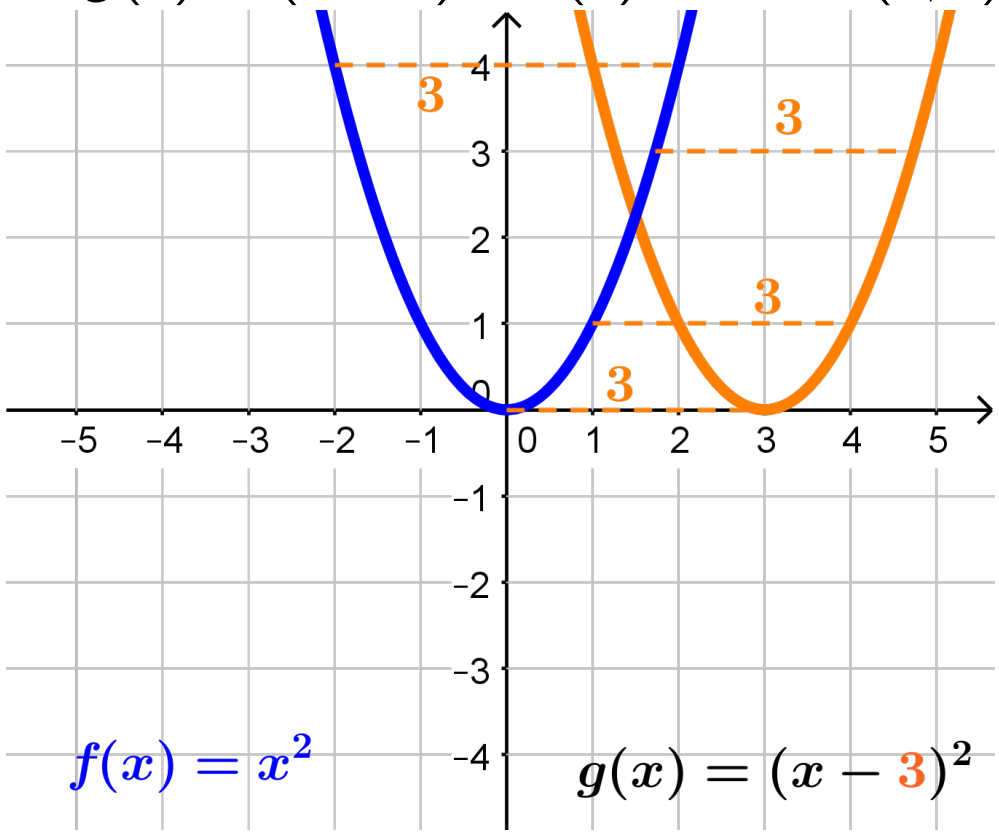

The graph of $g(x) = (x-3)^2$ is the graph of $f(x) = x^2$ shifted to the right by 3