Conditions

Graph the given function using the given values of x. Also use the graph to determine the domain and range of the function.
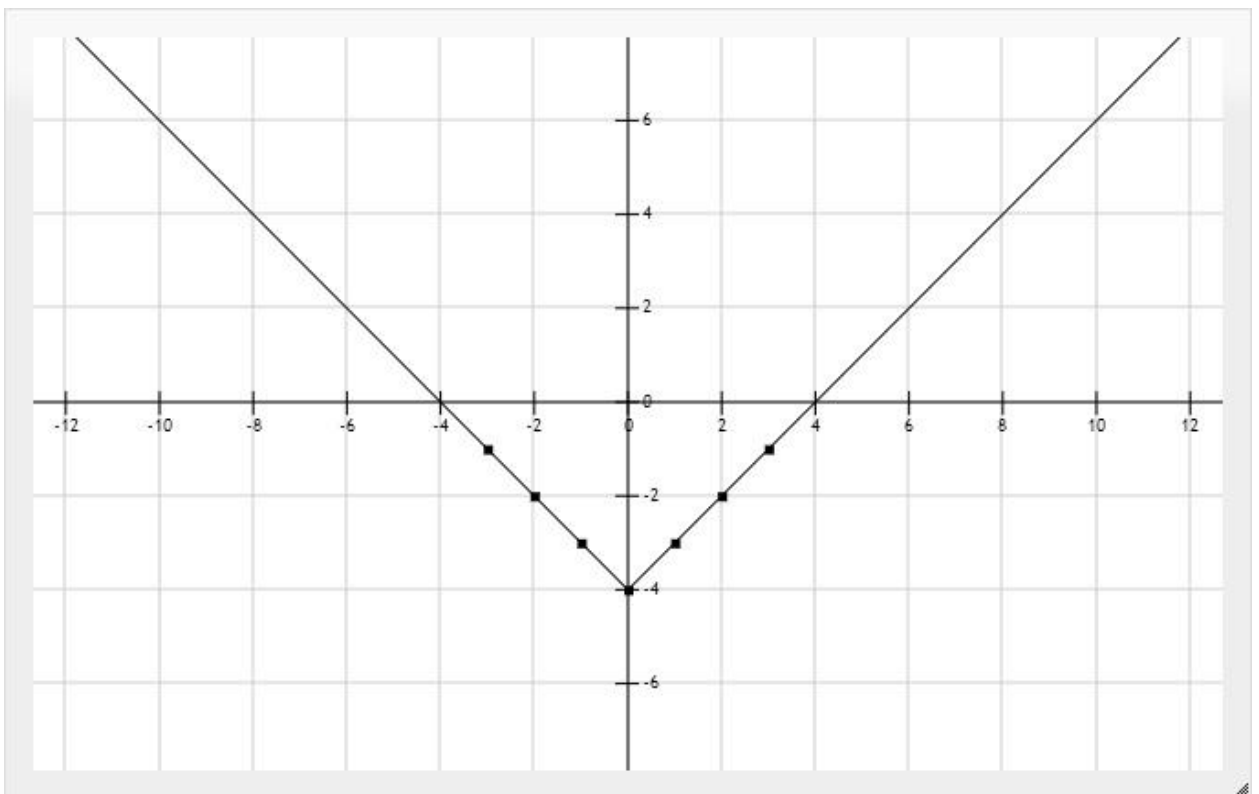
h(x)=|x|-4 ; x = -3, -2, -1, 0, 1, 2, 3

Solution

The domain of our functions is the set of all those x, for which the function exists. It's obvious, that the function exists for all $x \in (-\infty, \infty)$. As we know,

$$|x| = \begin{cases} x, x > 0 \\ -x, x < 0 \end{cases}$$

So, the range of function can be calculated as $f(x) = x - 4$, when $x > 0$, $f(0) = -4$, $f(x) = -x - 4$, where $x < 0$. Let's combine these three conditions in a graph

Answer:

The domain of the function:

$x \in (-\infty, \infty)$.

The range of the function:

$h(x) \in [-4, \infty)$.