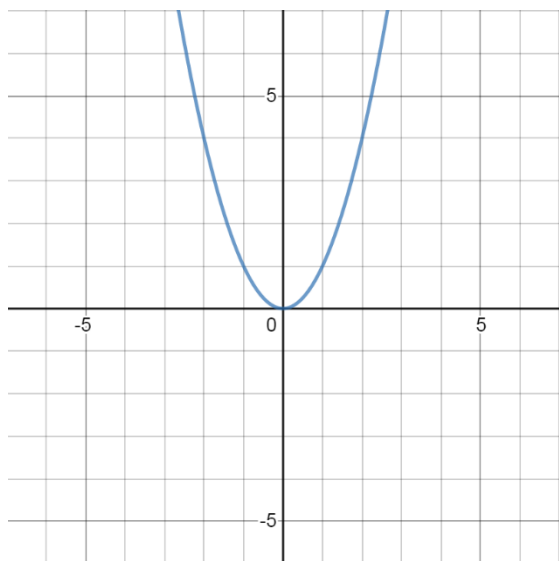Basic Functions and their Graphs

Earlier we saw graph of two very simple functions:

$$f(x) = x^2$$
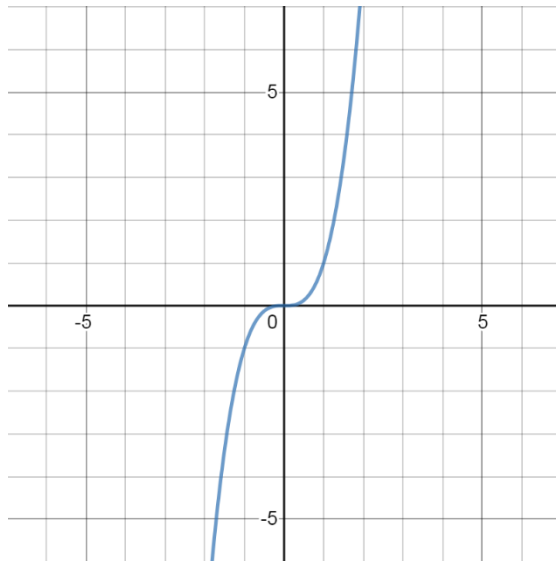
and

$$g(x) = x^3$$

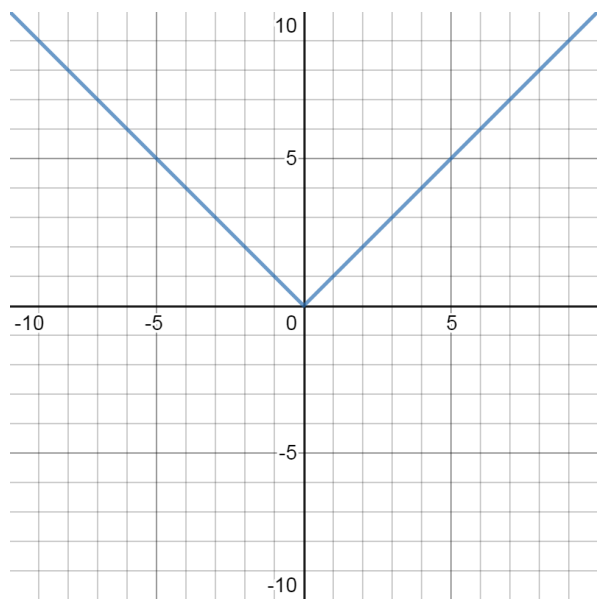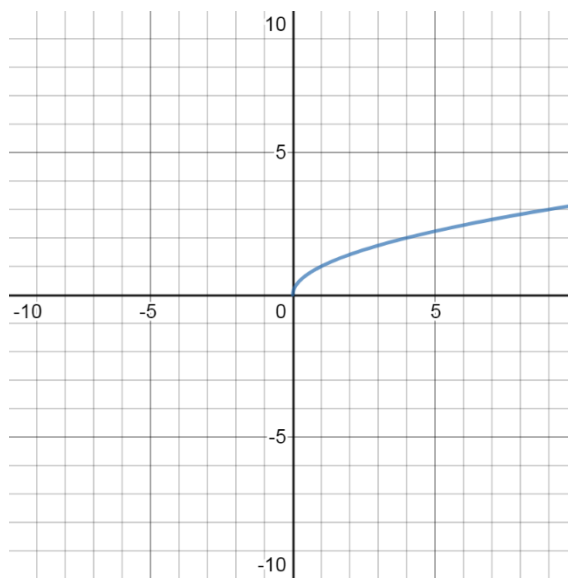These functions are so fundamental that we should know their graphs:

$$f(x) = x^2$$

$$g(x) = x^3$$

Also known as the "squaring function" and the "cubing function"

There are two other very fundamental graphs that we should know:

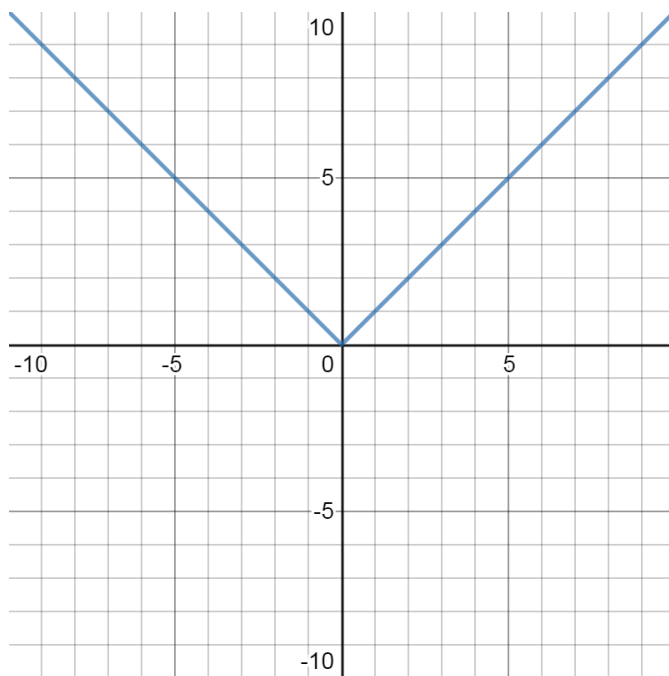
$$h(x) = |x|$$

$$p(x) = \sqrt{x}$$

Also known as the "absolute value" function and the "square root" function.

Sometimes these basic functions are referred to as "parent" functions.

We already looked at the square root function (which is really a radical function) to find its domain and range. How about the domain and range of the absolute value function?

Try to write it down.

$$h(x) = |x|$$

To see the domain, we note that going from left-to-right there are function values for every x. So the domain is

$$(-\infty, \infty)$$

or

$$\mathbb{R}$$

which stands for "all real numbers."

As for the range, we see something different.

There are no *negative* y-values.

So the range is

$$[0, \infty)$$