- A function is a conceptual machine that eats an input and gives you back an output. It always gives you the same output when you feed it the same input.
- A real world function: temperature at Fairbanks International Airport as a function of day and time.
- Mathematical functions model real world functions.
- In our class, functions eat a real number and give you back a real number as its output.
- Examples of mathematical functions:
- $f(x)=1 / x$
- $g(h)=\cos \left(\frac{x-3}{7}\right)$
- $p(x)=3 x^{4}-2 x+9$
- Domain: The allowed set of inputs to a function
- Range: For our class, the set of all possible outputs of a function.
- Just one real number as output for us: $\sqrt{9}=3$. Not $\pm 3$.
- Functions can be defined piecewise. Here's a really important one.

$$
|x|= \begin{cases}x & x \geq 0 \\ -x & x<0\end{cases}
$$

