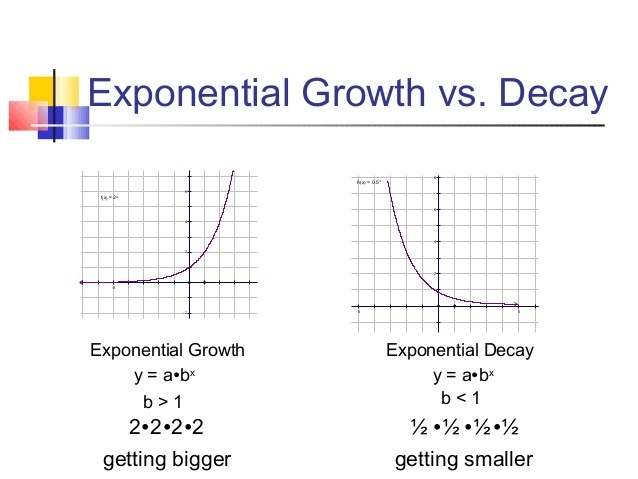
**Problem 1:** • F6: ab^x

This is an exponential function, which means as you increase xx, yy increases exponentially. The initial amount is given by the value aa, which is easy to see (just let x=0x=0x=0 and you have y=ay=ay=aleft). The growth factor is the value bb.

If you restrict b such that 0<b<10<b<10<b<1, the function will decay (represented below) and if b>1b>1b>1, the function will grow.



The Codomain and Range are both on the output side, but are subtly different.

The Codomain is the set of values that could **possibly** come out. The Codomain is actually **part of the definition** of the function.

And The Range is the set of values that **actually do** come out.

Example: we can define a function f(x)=2x with a domain and codomain of integers (because we say so).

But by thinking about it we can see that the range (actual output values) is just the evenintegers.

So the codomain is integers (we defined it that way), but the range is even integers.

The Range is a subset of the Codomain.

**Why both?** Well, sometimes we don't know the ***exact*** range (because the function may be complicated or not fully known), but we know the set it ***lies in*** (such as integers or reals). So we define the codomain and continue on.