Important broccoli.

- $5^3 5^2 = (5 \cdot 5 \cdot 5)(5 \cdot 5) = 5^5$
- And $r^a r^b = r^{a+b}$.
- $(5^3)^2 = (5^3) \cdot (5^3) = 5^{2 \cdot 3}$
- And $(r^a)^b = r^{ab}$
- $5^{-1} \cdot 5 = 5^0 = 1$ and therefore $5^{-1} = 1/5$.
- Also, $r^{-1} = 1/r$
- $(2 \cdot 7)^2 = (2 \cdot 7)(2 \cdot 7) = 2^2 7^2$.
- Also $(rs)^a = r^a s^a$

Exponential functions (applied!)

- Exponential functions $f(x) = a^x$ describe **doubling** or **halving** phenomena.
- They are different from power functions like $p(x) = x^7$
- A population that doubles every year has the form $g(t) = C\,2^t$ for some constant C.
- A population that doubles every three years has the form $g(t) = C\,2^{t/3}$.
- A population that halves every year has the form $g(t) = C\,2^{-t}$.
- An account that grows at 10% every year has the form $A(t) = C\,(1.1)^t$.
- Sneak preview: you can write $(1.1)^t$ as 2^{at} for a particuar number a. So this is also a doubling phenomenon.