

EXPONENTS AND THE FUNCTION

LAWS OF EXPONENTS

▶ $a^0 = 1$

▶ $\frac{a^n}{a^m} = a^{n-m}$

▶ $a^{\frac{1}{n}} = \sqrt[n]{a}$

▶ $a^1 = a$

▶ $a^n \times b^n = (a \times b)^n$

▶ $a^{\frac{n}{m}} = \sqrt[m]{a^n}$

▶ $a^{-n} = \frac{1}{a^n}$

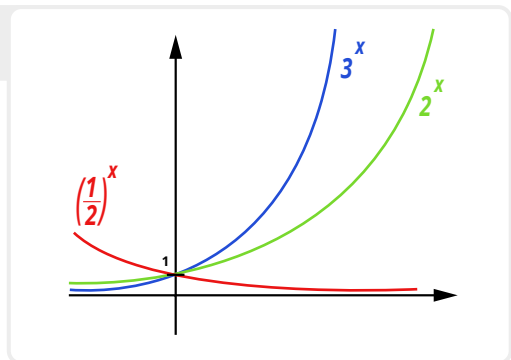
▶ $\frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$

▶ $(a^n)^m = a^{n \cdot m}$

▶ $a^n \times a^m = a^{n+m}$

EXPONENTIAL FUNCTION

- ▶ base: $a > 0, a \neq 1$
- ▶ asymptote: x-axis
- ▶ y-intercept: at $y = 1$
- ▶ if $a > 1$, then it's exponential growth
- ▶ if $0 < a < 1$, then it's exponential decay



modelling with exponential functions:

$$N = B a^{\frac{t}{k}} + c$$

- ▶ "initial": $t = 0$
- ▶ background level: c
- ▶ k : the time taken for the difference of N and c to increase by the factor a