Exponential and logarithmic functions: case $k > 1$

$f : \mathbb{R} \to]0, +\infty[,\ f(x) = k^x$

increasing, continuous

$$\lim_{x \to -\infty} k^x = 0^+$$

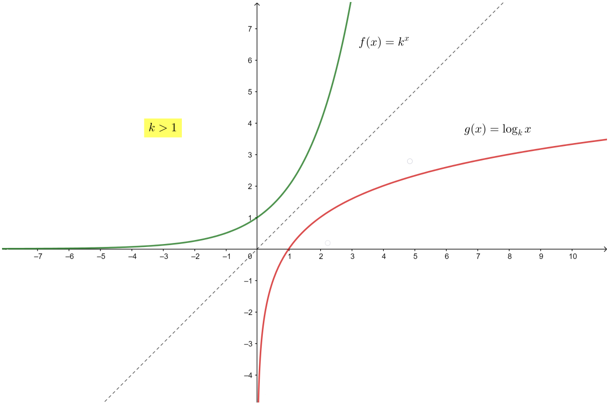
$$\lim_{x \to +\infty} k^x = +\infty$$

$g :]0, +\infty[\to \mathbb{R},\ g(x) = \log_k x$

increasing, continuous

$$\lim_{x \to 0^+} \log_k x = -\infty$$

$$\lim_{x \to +\infty} \log_k x = +\infty$$



Exponential and logarithmic functions: case $0 < k < 1$

$f : \mathbb{R} \to]0, +\infty[$, $f(x) = k^x$

decreasing, continuous

$$\lim_{x \to -\infty} k^x = +\infty$$

$$\lim_{x \to +\infty} k^x = 0^+$$

$g :]0, +\infty[\to \mathbb{R}$, $g(x) = \log_k x$

decreasing, continuous

$$\lim_{x \to 0^+} \log_k x = +\infty$$

$$\lim_{x \to +\infty} \log_k x = -\infty$$