Random Stuff

$\log(x) := \ln(x) := E^{-1}(x) \quad (x \in (0, \infty))$

$\log(1) = 0, \quad \log(e) = 1$

$\log(xy) = \log(x) + \log(y)$

$\log\left(\frac{x}{y}\right) = \log(x) - \log(y)$

$\log_a(x) = \frac{\log_b(x)}{\log_b(a)}$

$\log(x^m) = m \cdot \log(x)$

$a^x = e^{x \cdot \log(a)}$

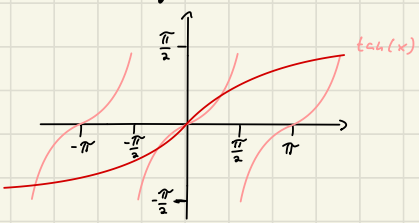
$a^{x+y} = a^x \cdot a^y$

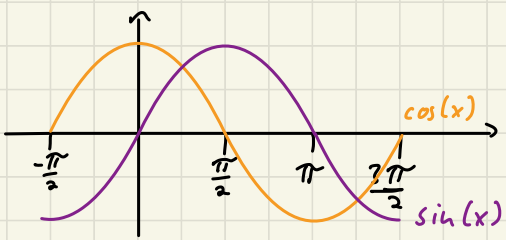
$\log(a^x) = \log\left(e^{x \cdot \log(a)}\right) = x \cdot \log(a)$

$(a^x)^y = a^{x \cdot y}$

$\tan(x) := \frac{\sin(x)}{\cos(x)}$

$\arctan(x) := \tan^{-1}(x)$





$\sin\left(x + \frac{\pi}{2}\right) = \cos(x)$

$\sin(x + \pi) = -\sin \qquad \cos(x + \pi) = -\cos(x)$

$\sin(x + 2\pi) = \sin(x) \qquad \cos(x + 2\pi) = \cos(x)$

$\sin(z + w) = \sin(z) \cdot \cos(w) + \sin(w) \cdot \cos(z)$

$\cos(z + w) = \cos(z) \cdot \cos(w) - \sin(z) \cdot \sin(w)$

$(\sin(x))' = \cos(x)$

$(\cos(x))' = -\sin(x)$

$(\tan(x))' = \frac{1}{\cos^2(x)}$

$(\arctan(x))' = \frac{1}{1 + x^2}$

geometrische Summenformel

$$\sum_{k=0}^{n} z^k = \frac{1 - z^{n+1}}{1 - z} \qquad (z \in \mathbb{C}, z \neq 1)$$