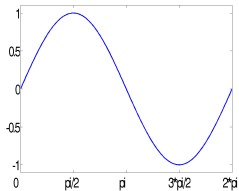
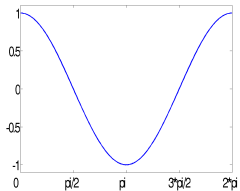
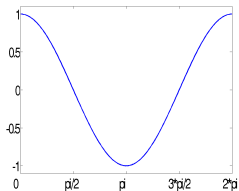
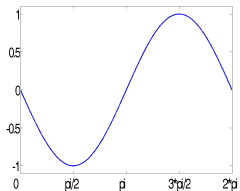
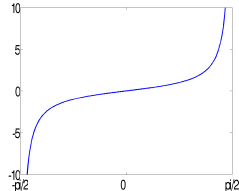
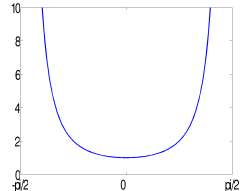
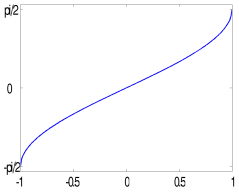
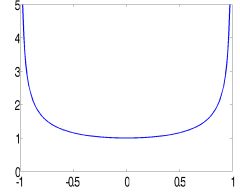
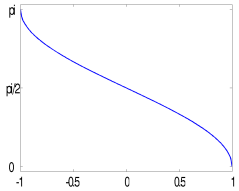
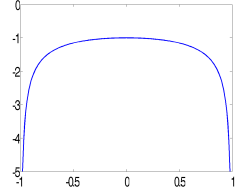
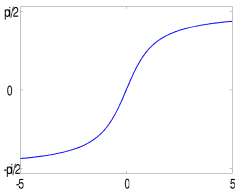
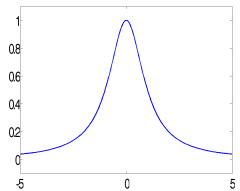
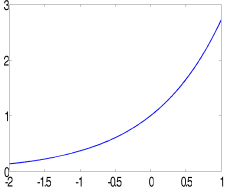
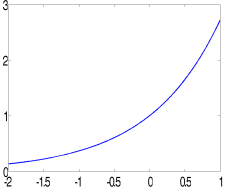
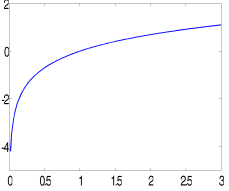
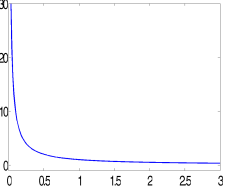
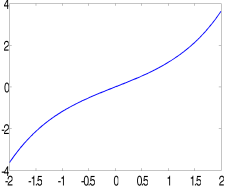
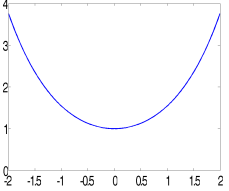
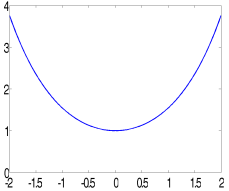
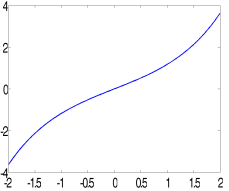
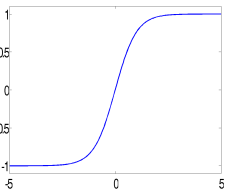
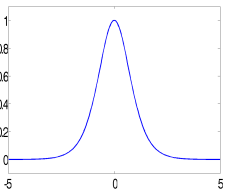


Höhere Mathematik für Bachelorstudiengänge I.1

Beispiel 4.22 (Elementare Funktionen und ihre Ableitungen)

$f(x)$	Abbildung	$f'(x)$	Abbildung	Bemerkung
x^α		$\alpha x^{\alpha-1}$		Definitionsbereich hängt von $\alpha \in \mathbb{R}$ ab
$\sin(x)$		$\cos(x)$		$x \in \mathbb{R}$
$\cos(x)$		$-\sin(x)$		$x \in \mathbb{R}$
$\tan(x)$		$\frac{1}{\cos^2(x)}$		$x \neq (2k+1)\frac{\pi}{2}, k \in \mathbb{Z}$
$\arcsin(x)$		$\frac{1}{\sqrt{1-x^2}}$		$ x < 1$
$\arccos(x)$		$\frac{-1}{\sqrt{1-x^2}}$		$ x < 1$
$\arctan(x)$		$\frac{1}{1+x^2}$		$x \in \mathbb{R}$

$f(x)$	Abbildung	$f'(x)$	Abbildung	Bemerkung
$e^x = \exp(x)$		e^x		$x \in \mathbb{R}$
a^x		$a^x \ln(a)$		$a > 0, \quad x \in \mathbb{R}$
$\ln(x)$		$\frac{1}{x}$		$x > 0$
$\log_a(x)$		$\frac{1}{x \ln(a)}$		$x > 0$
$\sinh(x)$		$\cosh(x)$		$x \in \mathbb{R}$
$\cosh(x)$		$\sinh(x)$		$x \in \mathbb{R}$
$\tanh(x)$		$\frac{1}{\cosh^2(x)}$		$x \in \mathbb{R}$