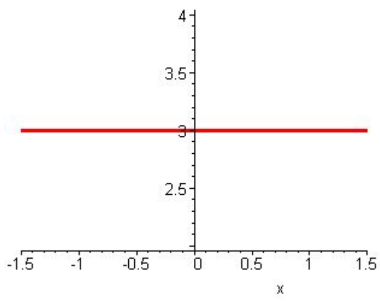
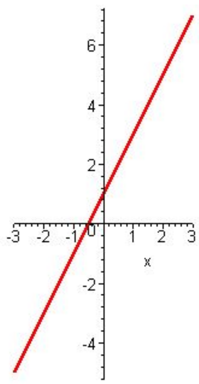
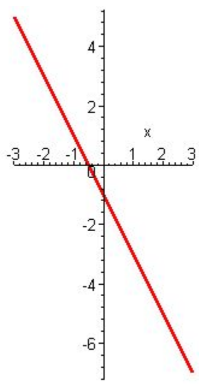
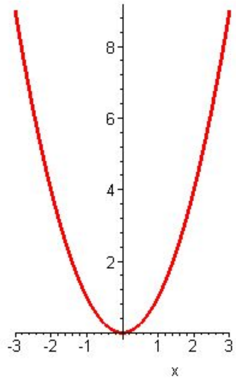
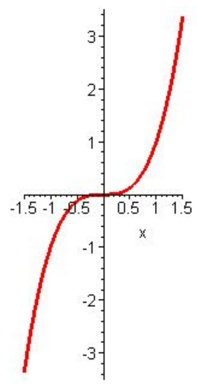
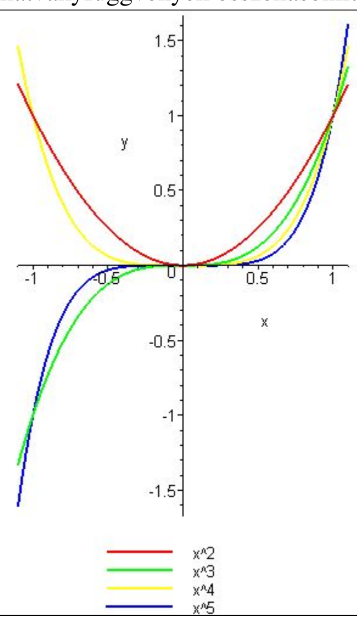
Konstans függvény	$f(x) = c, c \in \mathbf{R}$	$f(x) = 3$
	• $D_f = (-\infty, \infty), \quad R_f = \{c\}$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = c$ • $\lim\limits_{x \to \infty} f(x) = c$ • $f'(x) = 0$ • $D_{f'} = (-\infty, \infty), R_{f'} = \{0\}$ • $\int c\, dx = cx + C$	• $D_f = (-\infty, \infty), \quad R_f = \{3\}$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = 3,$ • $\lim\limits_{x \to \infty} f(x) = 3$ • $f'(x) = 0$ • $D_{f'} = (-\infty, \infty), R_{f'} = \{0\}$ • $\int 3\, dx = 3x + C$

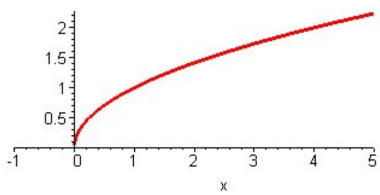
Lineáris függvény	$f(x) = ax + b, a > 0, b \in \mathbf{R}$	$f(x) = 2x + 1$
	• $D_f = (-\infty, \infty), R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = -\infty$ • $\lim\limits_{x \to \infty} f(x) = \infty$ • $f'(x) = a$ • $D_{f'} = (-\infty, \infty), R_{f'} = \{a\}$ • $\int (ax + b)\, dx = \frac{ax^2}{2} + bx + C$	• $D_f = (-\infty, \infty), R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = -\infty$ • $\lim\limits_{x \to \infty} f(x) = \infty$ • $f'(x) = 2$ • $D_{f'} = (-\infty, \infty), R_{f'} = \{2\}$ • $\int (2x + 1)\, dx = x^2 + x + C$

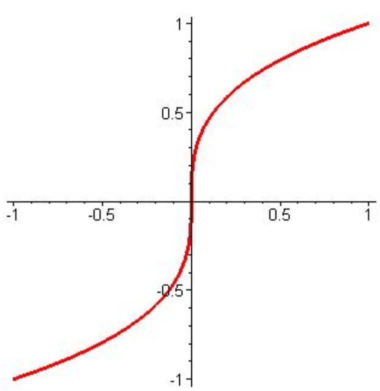
Lineáris függvény	$f(x) = ax + b, a < 0, b \in \mathbf{R}$	$f(x) = -2x - 1$
	• $D_f = (-\infty, \infty), R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = \infty$ • $\lim\limits_{x \to \infty} f(x) = -\infty$ • $f'(x) = a$ • $D_{f'} = (-\infty, \infty), R_{f'} = \{a\}$ • $\int (ax + b)\, dx = \frac{ax^2}{2} + bx + C$	• $D_f = (-\infty, \infty), R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = \infty$ • $\lim\limits_{x \to \infty} f(x) = -\infty$ • $f'(x) = -2$ • $D_{f'} = (-\infty, \infty), R_{f'} = \{-2\}$ • $\int (-2x - 1)\, dx = -x^2 - x + C$

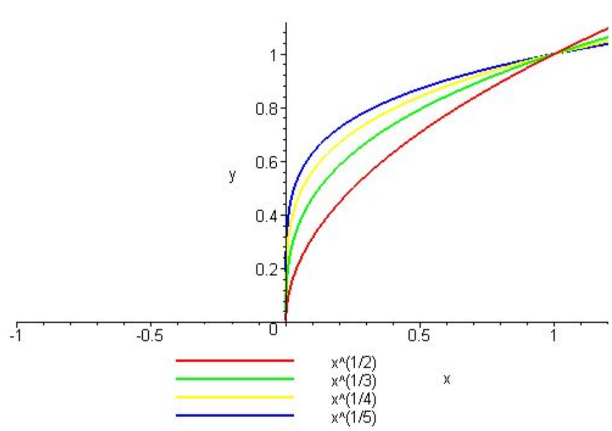
Hatványfüggvény	$f(x)=x^n$, n páros pozitív egész	$f(x)=x^2$
	• $D_f=(-\infty,\infty), \quad R_f=[0,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=\infty$ • $\lim\limits_{x\to\infty} f(x)=\infty$ • $f'(x)=nx^{n-1}$ • $D_{f'}=(-\infty,\infty), R_{f'}=(-\infty,\infty)$ • $\int x^n\,dx=\dfrac{x^{n+1}}{n+1}+C$	• $D_f=(-\infty,\infty), \quad R_f=[0,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=\infty$ • $\lim\limits_{x\to\infty} f(x)=\infty$ • $f'(x)=2x$, • $D_{f'}=(-\infty,\infty), R_{f'}=(-\infty,\infty)$ • $\int x^2\,dx=\dfrac{x^3}{3}+C$

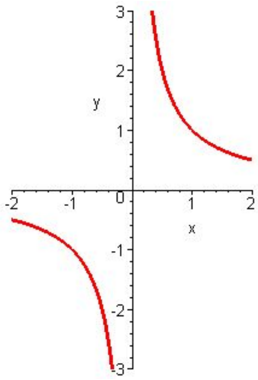
Hatványfüggvény	$f(x)=x^n$, n páratlan pozitív egész	$f(x)=x^3$
	• $D_f=(-\infty,\infty), R_f=(-\infty,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=-\infty$ • $\lim\limits_{x\to\infty} f(x)=\infty$, • $f'(x)=nx^{n-1}$ • $D_{f'}=(-\infty,\infty), \quad R_{f'}=[0,\infty)$ • $\int x^n\,dx=\dfrac{x^{n+1}}{n+1}+C$	• $D_f=(-\infty,\infty), R_f=(-\infty,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\longrightarrow-\infty} f(x)=-\infty$ • $\lim\limits_{x\longrightarrow\infty} f(x)=\infty$ • $f'(x)=3x^2$ • $D_{f'}=(-\infty,\infty), \quad R_{f'}=[0,\infty)$ • $\int x^3\,dx=\dfrac{x^4}{4}+C$

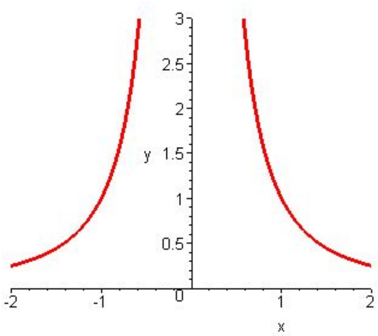
A hatványfüggvények összehasonlítása


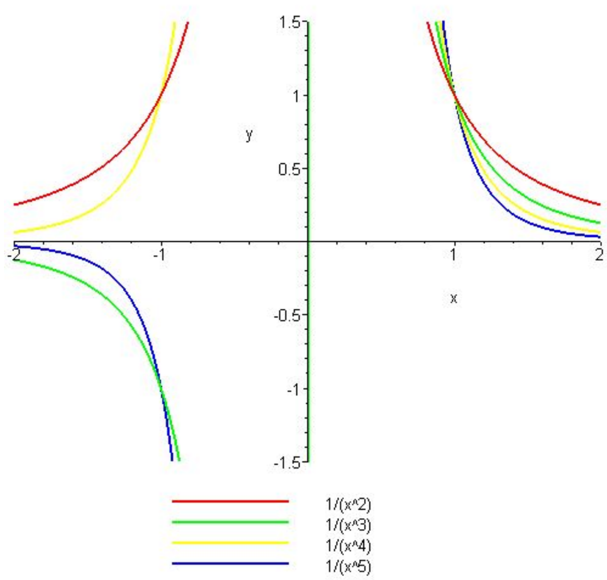
Gyökfüggvény	$f(x) = \sqrt[n]{x} = x^{\frac{1}{n}}$, n páros pozitív egész	$f(x) = \sqrt{x}$
	• $D_f = [0, \infty), \quad R_f = [0, \infty)$ • f a 0-ban balról folytonos, mindenütt máshol folytonos • $\lim_{x \to 0+} f(x) = 0$ • $\lim_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{n} \cdot x^{\frac{1}{n}-1} = \frac{1}{n \cdot \sqrt[n]{x^{n-1}}}$ • $D_{f'} = (0, \infty), \quad R_{f'} = (0, \infty)$ • $\int \sqrt[n]{x}\, dx = \int x^{\frac{1}{n}}\, dx = \frac{x^{\frac{1}{n}+1}}{\frac{1}{n}+1} + C$	• $D_f = [0, \infty), \quad R_f = [0, \infty)$ • f a 0-ban balról folytonos, mindenütt máshol folytonos • $\lim_{x \to 0+} f(x) = 0$ • $\lim_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{2\sqrt{x}}$ • $D_{f'} = (0, \infty), \quad R_{f'} = (0, \infty)$ • $\int \sqrt{x}\, dx = \frac{2}{3} x^{\frac{3}{2}} + C$

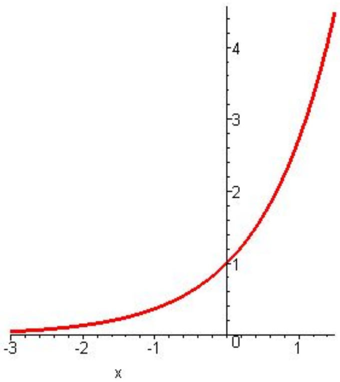
Gyökfüggvény	$f(x) = \sqrt[n]{x} = x^{\frac{1}{n}}$, n páratlan pozitív egész	$f(x) = \sqrt[3]{x}$
	• $D_f = (-\infty, \infty), R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim_{x \to -\infty} f(x) = -\infty$ • $\lim_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{n} \cdot x^{\frac{1}{n}-1} = \frac{1}{n \cdot \sqrt[n]{x^{n-1}}}$ • $D_{f'} = (-\infty, 0) \cup (0, \infty)$ • $R_{f'} = (0, \infty)$ • $\int \sqrt[n]{x}\, dx = \int x^{\frac{1}{n}}\, dx = \frac{x^{\frac{1}{n}+1}}{\frac{1}{n}+1} + C$	• $D_f = (-\infty, \infty), R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim_{x \to -\infty} f(x) = -\infty$ • $\lim_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{3\sqrt[3]{x^2}}$ • $D_{f'} = (-\infty, 0) \cup (0, \infty)$ • $R_{f'} = (0, \infty)$ • $\int \sqrt[3]{x} dx = \frac{3}{4} x^{\frac{4}{3}} + C$

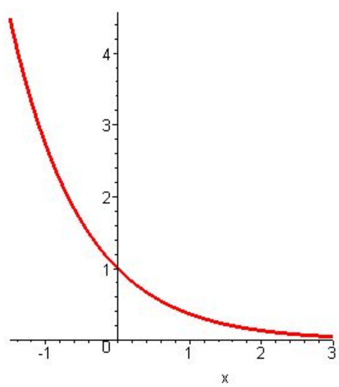
A gyökfüggvények összehasonlítása


Hiperbola	$f(x)=\frac{1}{x^n}$, n páratlan pozitív egész	$f(x)=\frac{1}{x}$
	• $D_f=(-\infty,0)\cup(0,\infty)$ • $R_f=(-\infty,0)\cup(0,\infty)$ • f mindenütt folytonos • $\lim_{x\to-\infty} f(x)=0$, $\lim_{x\to 0-} f(x)=-\infty$ • $\lim_{x\to 0+} f(x)=\infty$, $\lim_{x\to\infty} f(x)=0$ • $f'(x)=-\frac{n}{x^{n+1}}$ • $D_{f'}=(-\infty,0)\cup(0,\infty)$ • $R_{f'}=(-\infty,0)$ • $\int \frac{1}{x^n}\,dx=\frac{x^{-n+1}}{-n+1}+C, \quad n\neq 1$	• $D_f=(-\infty,0)\cup(0,\infty)$ • $R_f=(-\infty,0)\cup(0,\infty)$ • f mindenütt folytonos • $\lim_{x\to-\infty} f(x)=0$, $\lim_{x\to 0-} f(x)=-\infty$ • $\lim_{x\to 0+} f(x)=\infty$, $\lim_{x\to\infty} f(x)=0$ • $f'(x)=-\frac{1}{x^2}$ • $D_{f'}=(-\infty,0)\cup(0,\infty)$ • $R_{f'}=(-\infty,0)$ • $\int \frac{1}{x}\,dx=\ln\lvert x\rvert+C$

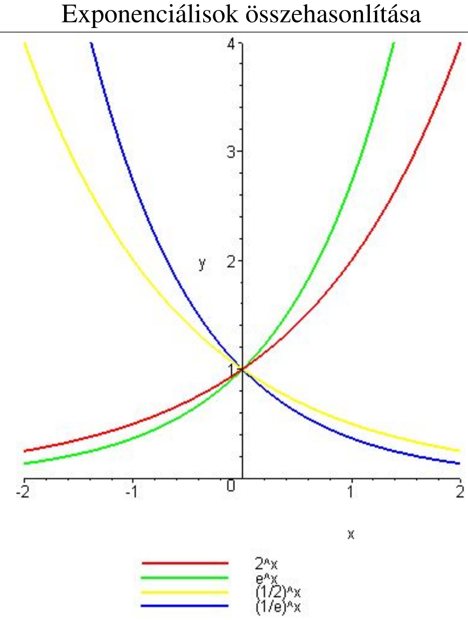
Hiperbola	$f(x)=\frac{1}{x^n}$, n páros pozitív egész	$f(x)=\frac{1}{x^2}$
	• $D_f=(-\infty,0)\cup(0,\infty)$ • $R_f=(0,\infty)$ • f mindenütt folytonos • $\lim_{x\to-\infty} f(x)=0$, $\lim_{x\to 0-} f(x)=\infty$ • $\lim_{x\to 0+} f(x)=\infty$, $\lim_{x\to\infty} f(x)=0$ • $f'(x)=-\frac{n}{x^{n+1}}$ • $D_{f'}=(-\infty,0)\cup(0,\infty)$ • $R_{f'}=(-\infty,0)\cup(0,\infty)$ • $\int \frac{1}{x^n}\,dx=\frac{x^{-n+1}}{-n+1}+C$	• $D_f=(-\infty,0)\cup(0,\infty)$ • $R_f=(0,\infty)$ • f mindenütt folytonos • $\lim_{x\to-\infty} f(x)=0$, $\lim_{x\to 0-} f(x)=\infty$ • $\lim_{x\to 0+} f(x)=\infty$, $\lim_{x\to\infty} f(x)=0$ • $f'(x)=-\frac{2}{x^3}$ • $D_{f'}=(-\infty,0)\cup(0,\infty)$ • $R_{f'}=(-\infty,0)\cup(0,\infty)$ • $\int \frac{1}{x^2}dx=-\frac{1}{x}+C$

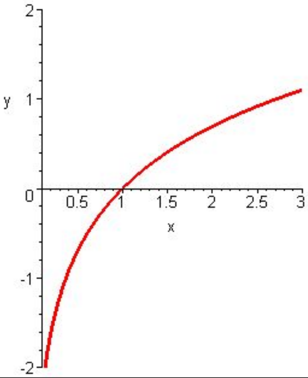
A hiperbolák összehasonlítása


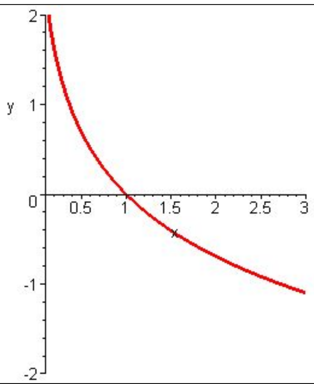
Exponenciális függvény	$f(x)=a^x,\, a>1$	$f(x)=e^x$
	• $D_f=(-\infty,\infty)$ • $R_f=(0,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=0,\ \lim\limits_{x\to\infty} f(x)=\infty$ • $f'(x)=a^x\ln a$ • $D_{f'}=(-\infty,\infty)$ • $R_{f'}=(0,\infty)$ • $\int a^x\,dx=\dfrac{a^x}{\ln a}+C$	• $D_f=(-\infty,\infty)$ • $R_f=(0,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=0,\ \lim\limits_{x\to\infty} f(x)=\infty$ • $f'(x)=e^x$ • $D_{f'}=(-\infty,\infty)$ • $R_{f'}=(0,\infty)$ • $\int e^x\,dx=e^x+C$

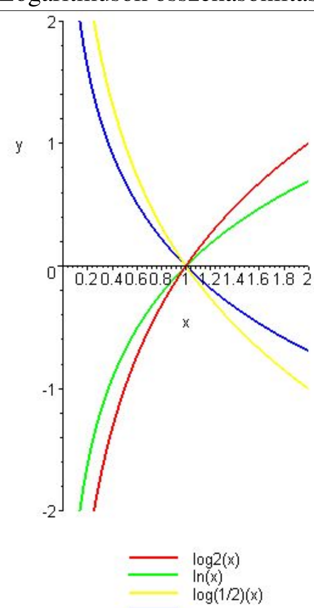
Exponenciális függvény	$f(x)=a^x,\, 0<a<1$	$f(x)=\left(\frac{1}{e}\right)^x$
	• $D_f=(-\infty,\infty)$ • $R_f=(0,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=\infty,\ \lim\limits_{x\to\infty} f(x)=0$ • $f'(x)=a^x\ln a$ • $D_{f'}=(-\infty,\infty)$ • $R_{f'}=(-\infty,0)$ • $\int a^x\,dx=\dfrac{a^x}{\ln a}+C$	• $D_f=(-\infty,\infty)$ • $R_f=(0,\infty)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x)=\infty,\ \lim\limits_{x\to\infty} f(x)=0$ • $f'(x)=\left(\frac{1}{e}\right)^x\ln\left(\frac{1}{e}\right)=-\left(\frac{1}{e}\right)^x$ • $D_{f'}=(-\infty,\infty)$ • $R_{f'}=(-\infty,0)$ • $\int\left(\frac{1}{e}\right)^x\,dx=\frac{\left(\frac{1}{e}\right)^x}{\ln\left(\frac{1}{e}\right)}=-\left(\frac{1}{e}\right)^x+C$

Exponenciálisok összehasonlítása

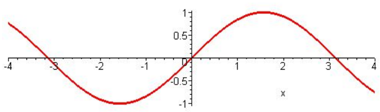


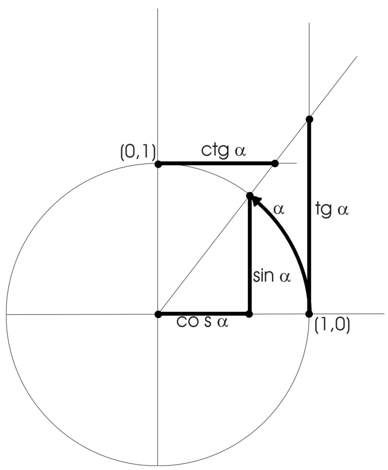
Logaritmus függvény	$f(x) = \log_a(x),\, a > 1$	$f(x) = \ln x$
	• $D_f = (0, \infty)$ • $R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim_{x \to 0+} f(x) = -\infty,\, \lim_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{x \ln a}$ • $D_{f'} = (0, \infty)$ • $R_{f'} = (0, \infty)$	• $D_f = (0, \infty)$ • $R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim_{x \to 0+} f(x) = -\infty,\, \lim_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{x}$ • $D_{f'} = (0, \infty)$ • $R_{f'} = (0, \infty)$

Logaritmus függvény	$f(x) = \log_a(x),\, 0 < a < 1$	$f(x) = \log_{\frac{1}{e}}(x)$
	• $D_f = (0, \infty)$ • $R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim_{x \to 0+} f(x) = \infty,\, \lim_{x \to \infty} f(x) = -\infty$ • $f'(x) = \frac{1}{x \ln a}$ • $D_{f'} = (0, \infty)$ • $R_{f'} = (-\infty, 0)$	• $D_f = (0, \infty)$ • $R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim_{x \to 0+} f(x) = \infty,\, \lim_{x \to \infty} f(x) = -\infty$ • $f'(x) = \frac{1}{x \ln\left(\frac{1}{e}\right)} = -\frac{1}{x}$ • $D_{f'} = (0, \infty)$ • $R_{f'} = (-\infty, 0)$

Logaritmusok összehasonlítása


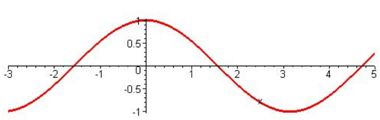
Szinuszfüggvény	$f(x) = \sin x$

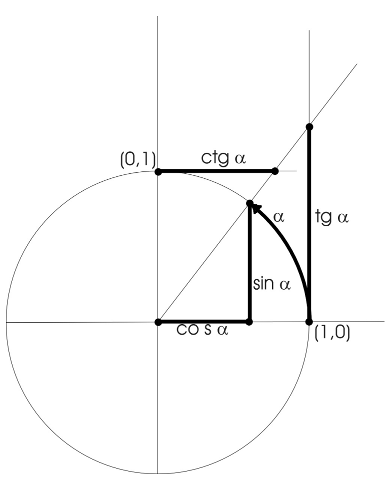




- $D_f = (-\infty, \infty)$
- $R_f = [-1, 1]$
- f mindenütt folytonos,
- $\lim\limits_{x \to -\infty} f(x)$ és $\lim\limits_{x \to \infty} f(x)$ nem létezik
- $f'(x) = \cos x$
- $D_{f'} = (-\infty, \infty)$
- $R_{f'} = [-1, 1]$
- $\int \sin x \, dx = -\cos x + C$

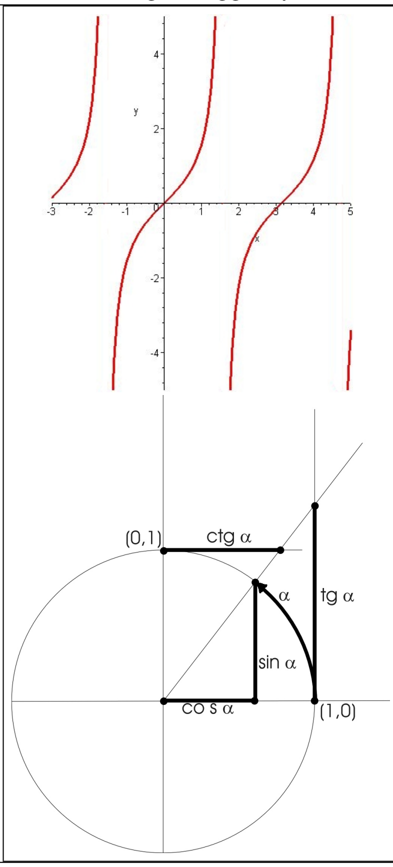
Koszinuszfüggvény	$f(x) = \cos x$





- $D_f = (-\infty, \infty)$
- $R_f = [-1, 1]$
- f mindenütt folytonos
- $\lim\limits_{x \to -\infty} f(x)$ és $\lim\limits_{x \to \infty} f(x)$ nem létezik
- $f'(x) = -\sin x$
- $D_{f'} = (-\infty, \infty)$
- $R_{f'} = [-1, 1]$
- $\int \cos x \, dx = \sin x + C$

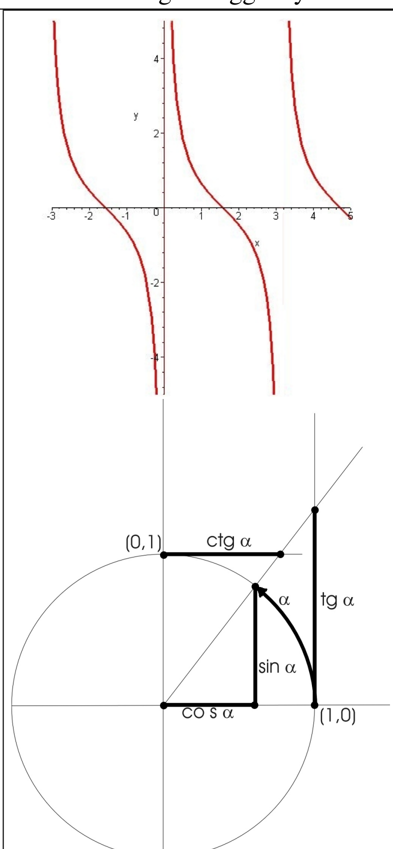
Tangensfüggvény	$f(x) = \text{tg}\, x$



$$f(x) = \text{tg}\, x = \frac{\sin x}{\cos x}$$

- $D_f = (-\infty, \infty) \setminus \{\frac{\pi}{2} + k\pi | k \in Z\}$
- $R_f = (-\infty, \infty)$
- f mindenütt folytonos
- $\lim_{x \to \frac{\pi}{2} + k\pi -} f(x) = \infty, \lim_{x \to \frac{\pi}{2} + k\pi +} f(x) = -\infty$
- $\lim_{x \to -\infty} f(x)$ és $\lim_{x \to \infty} f(x)$ nem létezik
- $f'(x) = \frac{1}{\cos^2 x}$
- $D_{f'} = (-\infty, \infty) \setminus \{\frac{\pi}{2} + k\pi | k \in Z\}$
- $R_{f'} = [1, \infty)$

Kotangensfüggvény	$f(x) = \text{ctg}\, x$



$$f(x) = \text{ctg}\, x = \frac{\cos x}{\sin x}$$

- $D_f = (-\infty, \infty) \setminus \{k\pi | k \in Z\}$
- $R_f = (-\infty, \infty)$
- f mindenütt folytonos
- $\lim_{x \to k\pi -} f(x) = -\infty, \lim_{x \to k\pi +} f(x) = \infty$
- $\lim_{x \to -\infty} f(x)$ és $\lim_{x \to \infty} f(x)$ nem létezik
- $f'(x) = -\frac{1}{\sin^2 x}$
- $D_{f'} = (-\infty, \infty) \setminus \{k\pi | k \in Z\}$
- $R_{f'} = (-\infty, -1]$

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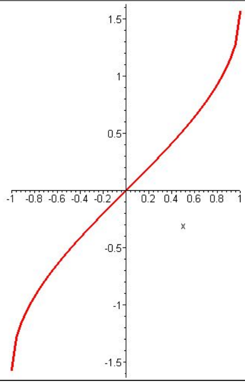

</td><td>

- $R_f = \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$
- f a -1-ben jobbról, az 1-ben balról folytonos, mindenütt máshol folytonos
- $\lim\limits_{x \to -1+} f(x) = -\frac{\pi}{2}$, $\lim\limits_{x \to 1-} f(x) = \frac{\pi}{2}$
- $f'(x) = \frac{1}{\sqrt{1-x^2}}$
- $D_{f'} = (-1, 1)$
- $R_{f'} = [1, \infty)$

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<tr><th>Arkuszkoszinusz függvény</th><th>$f(x) = \arccos x$</th></tr>
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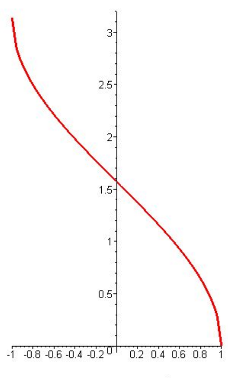

</td><td>

- $D_f = [-1, 1]$
- $R_f = [0, \pi]$
- f a -1-ben jobbról, az 1-ben balról folytonos, mindenütt máshol folytonos
- $\lim\limits_{x \to -1+} f(x) = \pi$, $\lim\limits_{x \to 1-} f(x) = 0$
- $f'(x) = -\frac{1}{\sqrt{1-x^2}}$
- $D_{f'} = (-1, 1)$
- $R_{f'} = (-\infty, -1]$

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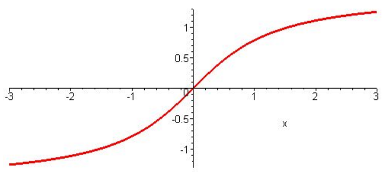
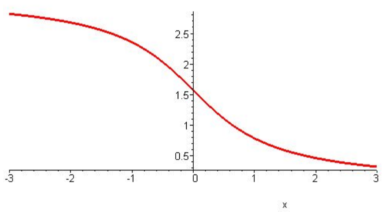
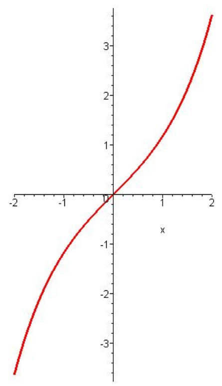
Arkusztangens függvény	$f(x) = \text{arctg}\ x$
	• $D_f = (-\infty, \infty)$ • $R_f = \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x) = -\frac{\pi}{2}$, $\lim\limits_{x\to\infty} f(x) = \frac{\pi}{2}$ • $f'(x) = \frac{1}{1+x^2}$ • $D_{f'} = (-\infty, \infty)$ • $R_{f'} = (0, 1]$

Arkuszkotangens függvény	$f(x) = \text{arcctg}\ x$
	• $D_f = (-\infty, \infty)$ • $R_f = (0, \pi)$ • f mindenütt folytonos • $\lim\limits_{x\to-\infty} f(x) = \pi$, $\lim\limits_{x\to\infty} f(x) = 0$ • $f'(x) = -\frac{1}{1+x^2}$ • $D_{f'} = (-\infty, \infty)$ • $R_{f'} = [-1, 0)$

<table>
<tr><th>Szinusz hiperbolikusz függvény</th><th>$f(x) = \text{sh } x$</th></tr>
<tr><td>
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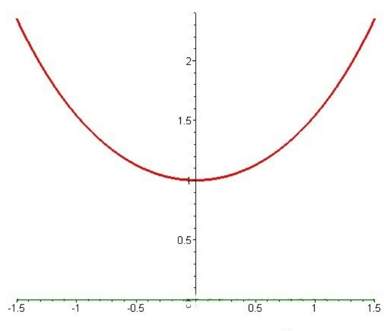
$$f(x) = \text{sh } x = \frac{e^x - e^{-x}}{2}$$

- $D_f = (-\infty, \infty)$
- $R_f = (-\infty, \infty)$
- f mindenütt folytonos
- $\lim\limits_{x \to -\infty} f(x) = -\infty$, $\lim\limits_{x \to \infty} f(x) = \infty$
- $f'(x) = \text{ch } x$
- $D_{f'} = (-\infty, \infty)$
- $R_{f'} = [1, \infty)$
- $\int \text{sh } x \, dx = \text{ch } x + C$

</td></tr>
</table>

<table>
<tr><th>Koszinusz hiperbolikusz függvény</th><th>$f(x) = \text{ch } x$</th></tr>
<tr><td>
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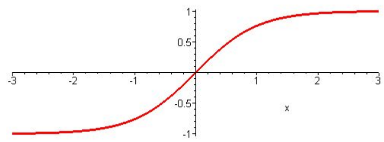
$$f(x) = \text{ch } x = \frac{e^x + e^{-x}}{2}$$

- $D_f = (-\infty, \infty)$
- $R_f = [1, \infty)$
- f mindenütt folytonos
- $\lim\limits_{x \to -\infty} f(x) = \infty$, $\lim\limits_{x \to \infty} f(x) = \infty$
- $f'(x) = \text{sh } x$
- $D_{f'} = (-\infty, \infty)$
- $R_{f'} = (-\infty, \infty)$
- $\int \text{ch } x \, dx = \text{sh } x + C$

</td></tr>
</table>

<table>
<tr><td>Tangens hiperbolikusz függvény</td><td>$f(x) = \text{th } x$</td></tr>
<tr><td>
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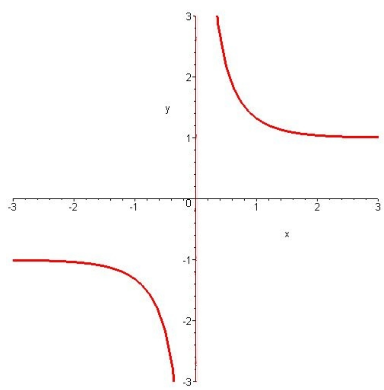
$$f(x) = \text{th } x = \frac{\text{sh } x}{\text{ch } x}$$

$D_f = (-\infty, \infty)$
$R_f = (-1, 1)$
f mindenütt folytonos
$\lim\limits_{x \to -\infty} f(x) = -1, \lim\limits_{x \to \infty} f(x) = 1$
$f'(x) = \frac{1}{\text{ch}^2 x}$
$D_{f'} = (-\infty, \infty)$
$R_{f'} = (0, 1]$

</td></tr>
</table>

<table>
<tr><td>Kotangens hiperbolikusz függvény</td><td>$f(x) = \text{cth } x$</td></tr>
<tr><td>
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$$f(x) = \text{cth } x = \frac{\text{ch } x}{\text{sh } x}$$

$D_f = (-\infty, 0) \cup (0, \infty)$
$R_f = (-\infty, -1) \cup (1, \infty)$
f mindenütt folytonos
$\lim\limits_{x \to -\infty} f(x) = -1, \lim\limits_{x \to 0-} f(x) = -\infty$
$\lim\limits_{x \to 0+} f(x) = \infty, \lim\limits_{x \to \infty} f(x) = 1$
$f'(x) = -\frac{1}{\text{sh}^2 x}$
$D_{f'} = (-\infty, 0) \cup (0, \infty)$
$R_{f'} = (-\infty, 0)$

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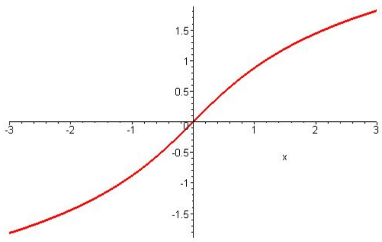
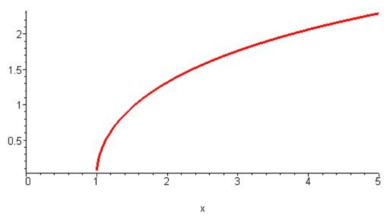
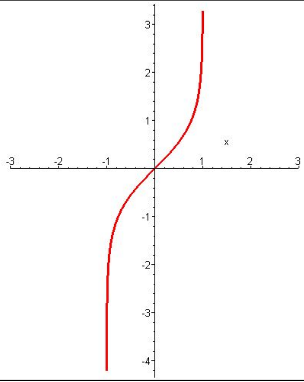
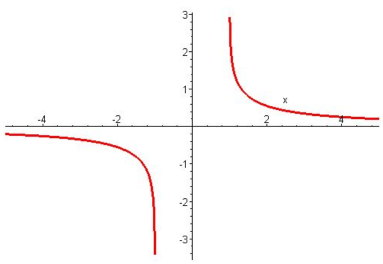
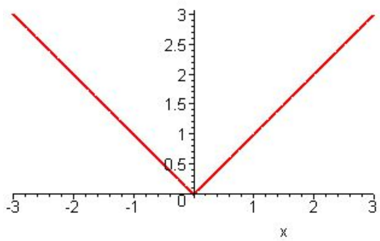
</table>

Area szinusz hiperbolikusz függvény	$f(x) = \text{arsh } x$
	• $D_f = (-\infty, \infty)$ • $R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = -\infty$, $\lim\limits_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{\sqrt{x^2+1}}$ • $D_{f'} = (-\infty, \infty)$ • $R_{f'} = (0, 1]$

Area koszinusz hiperbolikusz függvény	$f(x) = \text{arch } x$
	• $D_f = [1, \infty)$ • $R_f = [0, \infty)$ • f az 1-ben jobbról folytonos, mindenütt máshol folytonos • $\lim\limits_{x \to 1+} f(x) = 0$, $\lim\limits_{x \to \infty} f(x) = \infty$ • $f'(x) = \frac{1}{\sqrt{x^2-1}}$ • $D_{f'} = (1, \infty)$ • $R_{f'} = (0, \infty)$

Area tangens hiperbolikusz függvény	$f(x) = \text{arth}\, x$
	• $D_f = (-1, 1)$ • $R_f = (-\infty, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -1+} f(x) = -\infty$, $\lim\limits_{x \to 1-} f(x) = \infty$ • $f'(x) = \frac{1}{1-x^2}$ • $D_{f'} = (-1, 1)$ • $R_{f'} = [1, \infty)$

Area kotangens hiperbolikusz függvény	$f(x) = \text{arcth}\, x$
	• $D_f = (-\infty, -1) \cup (1, \infty)$ • $R_f = (-\infty, 0) \cup (0, \infty)$ • f mindenütt folytonos • $\lim\limits_{x \to -\infty} f(x) = 0$, $\lim\limits_{x \to -1-} f(x) = -\infty$ • $\lim\limits_{x \to 1+} f(x) = \infty$, $\lim\limits_{x \to \infty} f(x) = 0$ • $f'(x) = \frac{1}{1-x^2}$ • $D_{f'} = (-\infty, -1) \cup (1, \infty)$ • $R_{f'} = (-\infty, 0)$

<table>
<tr><th>Abszolút érték függvény</th><th>$f(x) = |x|$</th></tr>
<tr><td>
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$$f(x) = |x| = \begin{cases} -x & \text{ha } x < 0 \\ 0 & \text{ha } x = 0 \\ x & \text{ha } x > 0 \end{cases}$$

- $D_f = (-\infty, \infty)$
- $R_f = [0, \infty)$
- f mindenütt folytonos,
- $\lim_{x\to-\infty} f(x) = \infty$, $\lim_{x\to\infty} f(x) = \infty$
- $f'(x) = \begin{cases} -1 & \text{ha } x < 0 \\ 1 & \text{ha } x > 0 \end{cases}$
- $D_{f'} = (-\infty, 0) \cup (0, \infty)$
- $R_{f'} = \{-1, 1\}$

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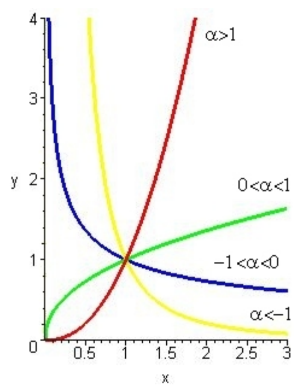
</table>

<table>
<tr><th>Általános hatvány függvény</th><th>$f(x) = x^\alpha$, α irracionális</th></tr>
<tr><td>
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$$f(x) = x^{\sqrt{5}}, \quad x^{\frac{1}{\sqrt{5}}}, \quad x^{-\sqrt{5}}, \quad x^{-\frac{1}{\sqrt{5}}}$$

- $D_f = [0, \infty)$, ha $\alpha > 0$, $D_f = (0, \infty)$, ha $\alpha < 0$
- $R_f = [0, \infty)$, ha $\alpha > 0$, $R_f = (0, \infty)$, ha $\alpha < 0$
- f a nullában balról folytonos, mindenütt máshol folytonos, ha $\alpha > 0$
- f mindenütt folytonos, ha $\alpha < 0$
- $\lim_{x\to0+} f(x) = 0$, $\lim_{x\to\infty} f(x) = \infty$, ha $\alpha > 0$
- $\lim_{x\to0+} f(x) = \infty$, $\lim_{x\to\infty} f(x) = 0$, ha $\alpha < 0$
- $f'(x) = \alpha x^{\alpha-1}$
- $D_{f'} = (0, \infty)$
- $R_{f'} = (0, \infty)$, ha $\alpha > 0$
- $R_{f'} = (-\infty, 0)$, ha $\alpha < 0$
- $\int x^\alpha \, dx = \frac{x^{\alpha+1}}{\alpha+1} + C$

</td></tr>
</table>