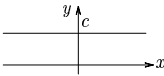
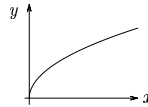
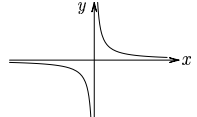
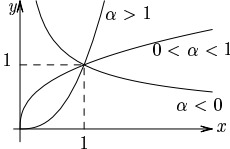
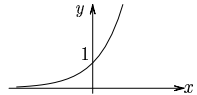
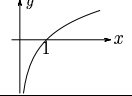
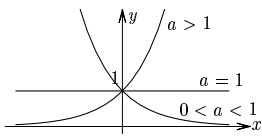
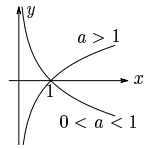
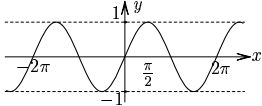
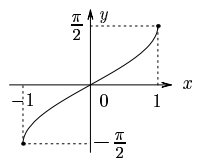
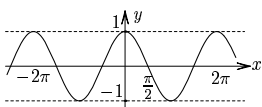
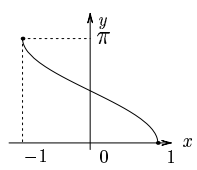


Elemi függvények deriváltja

A zölddel jelölt függvények deriváltjait fejből kell tudni!

| \mathcal{D}_f és $\mathcal{D}_{f'}$ | $f(x)$ | $f'(x)$ | f képe |
|---|--|---------------------------|---|
| \mathbb{R} | c ($c \in \mathbb{R}$) | 0 |  |
| $\mathbb{R} \setminus \{0\}$ | x^n ($n \in \mathbb{Z}$) | nx^{n-1} | |
| $\mathcal{D}_f = [0, +\infty)$ $\mathcal{D}_{f'} = (0, +\infty)$ | \sqrt{x} | $\frac{1}{2\sqrt{x}}$ |  |
| $\mathbb{R} \setminus \{0\}$ | $\frac{1}{x}$ | $-\frac{1}{x^2}$ |  |
| $(0, +\infty)$ | x^α ($\alpha \in \mathbb{R}$) | $\alpha x^{\alpha-1}$ |  |
| \mathbb{R} | e^x | e^x |  |
| $(0, +\infty)$ | $\ln x$ | $\frac{1}{x}$ |  |
| \mathbb{R} | a^x ($a \in (0, +\infty)$) | $a^x \ln a$ |  |
| $(0, +\infty)$ | $\log_a x$ ($a \in \mathbb{R}^+ \setminus \{1\}$) | $\frac{1}{x \ln a}$ |  |
| \mathbb{R} | $\sin x$ | $\cos x$ |  |
| $\mathcal{D}_f = [-1, 1]$ $\mathcal{D}_{f'} = (-1, 1)$ | $\arcsin x$ | $\frac{1}{\sqrt{1-x^2}}$ |  |
| \mathbb{R} | $\cos x$ | $-\sin x$ |  |
| $\mathcal{D}_f = [-1, 1]$ $\mathcal{D}_{f'} = (-1, 1)$ | $\arccos x$ | $-\frac{1}{\sqrt{1-x^2}}$ |  |

| | | | |
|---|---|----------------------------|--|
| $\mathbb{R} \setminus \{\frac{\pi}{2} + k\pi \mid k \in \mathbb{Z}\}$ | $\text{tg } x$ | $\frac{1}{\cos^2 x}$ | |
| \mathbb{R} | $\text{arctg } x$ | $\frac{1}{1+x^2}$ | |
| $\mathbb{R} \setminus \{k\pi \mid k \in \mathbb{Z}\}$ | $\text{ctg } x$ | $-\frac{1}{\sin^2 x}$ | |
| \mathbb{R} | $\text{arctg } x$ | $-\frac{1}{1+x^2}$ | |
| \mathbb{R} | $\text{sh } x$ ($:= \frac{e^x - e^{-x}}{2}$) | $\text{ch } x$ | |
| \mathbb{R} | $\text{arsh } x$ ($= \ln(x + \sqrt{x^2 + 1})$) | $\frac{1}{\sqrt{x^2 + 1}}$ | |
| \mathbb{R} | $\text{ch } x$ ($:= \frac{e^x + e^{-x}}{2}$) | $\text{sh } x$ | |
| $\mathcal{D}_f = [1, +\infty)$ $\mathcal{D}_{f'} = (1, +\infty)$ | $\text{arch } x$ ($= \ln(x + \sqrt{x^2 - 1})$) | $\frac{1}{\sqrt{x^2 - 1}}$ | |
| \mathbb{R} | $\text{th } x$ ($:= \frac{\text{sh } x}{\text{ch } x}$) | $\frac{1}{\text{ch}^2 x}$ | |
| $(-1, 1)$ | $\text{arth } x$ ($= \frac{1}{2} \ln \frac{1+x}{1-x}$) | $\frac{1}{1-x^2}$ | |
| $\mathbb{R} \setminus \{0\}$ | $\text{cth } x$ ($:= \frac{\text{ch } x}{\text{sh } x}$) | $-\frac{1}{\text{sh}^2 x}$ | |
| $(-\infty, -1) \cup (1, +\infty)$ | $\text{arch } x$ ($= \frac{1}{2} \ln \frac{x+1}{x-1}$) | $\frac{1}{1-x^2}$ | |