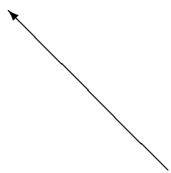
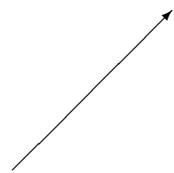


$$\begin{array}{ccccc}
& & (\operatorname{Arcth} x)' = \frac{1}{1-x^2} & & \\
& & \uparrow & & \\
& & (\operatorname{cth} x)' = -\frac{1}{\operatorname{sh}^2 x} & & (\operatorname{Arth} x)' = \frac{1}{1-x^2} \\
& & \uparrow & \searrow & \uparrow \\
(\operatorname{Arch} x)' = \frac{1}{\sqrt{x^2-1}} & \xleftarrow{\hspace{-1cm}} & (\operatorname{ch} x)' = \operatorname{sh} x & \xrightarrow{\hspace{-1cm}} & (\operatorname{th} x)' = \frac{1}{\operatorname{ch}^2 x} \\
& & \uparrow & & \uparrow \\
& & (\log_a x)' = \frac{1}{x \ln a} & \xleftarrow{\hspace{-1cm}} & (\operatorname{sh} x)' = \operatorname{ch} x \\
& & \uparrow & & \downarrow \\
& & \lim_{x \rightarrow 0} \frac{a^x - 1}{x} = \ln a & & (\operatorname{Arsh} x)' = \frac{1}{\sqrt{1+x^2}} \\
& & \uparrow & & \\
& & \lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = e & & \\
& & \uparrow & & \\
& & \lim_{x \rightarrow -\infty} \left(1 + \frac{1}{x}\right)^x = e & & \\
& & \uparrow & & \\
& & \lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x = e & & \\
& & \uparrow & & \\
& & \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = e & &
\end{array}$$

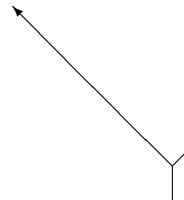
$$(\arctg x)' = \frac{1}{1+x^2}$$



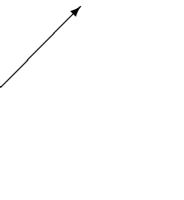
$$(\text{arcctg } x)' = -\frac{1}{1+x^2}$$



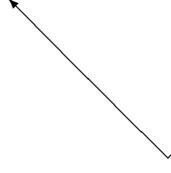
$$(\tg x)' = \frac{1}{\cos^2 x}$$



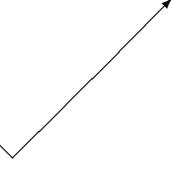
$$(\text{ctg } x)' = -\frac{1}{\sin^2 x}$$



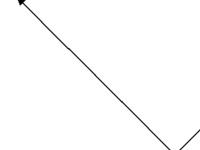
$$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$$



$$(\arccos x)' = -\frac{1}{\sqrt{1-x^2}}$$



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



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

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

