Derivatives of Logarithmic Functions

Section 3.6

Derivatives of Logarithmic Functions

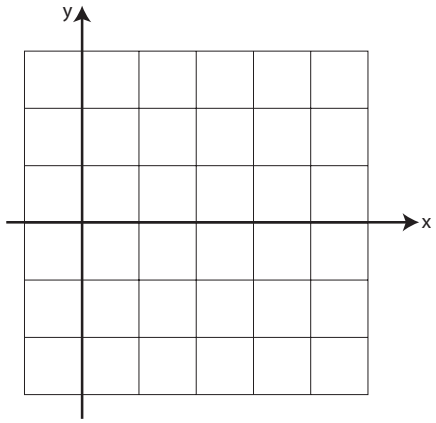
If $f(x) = \log_a x$,

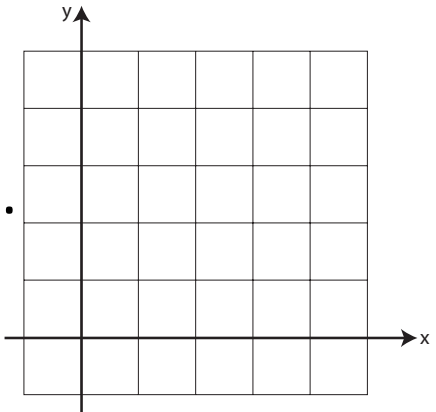
then $f'(x) = \dfrac{1}{x \cdot \ln a}$.

Example:

Differentiate $f(x) = \ln x$.

Sketch f and f′.





Derivatives of Logarithmic Functions

More Examples:

Differentiate.

$(a)\quad y = \ln(x + x^2)$

$(b)\quad f(x) = \log_{10} \dfrac{x^2\sqrt{3x-1}}{10^{x-1}}$

Derivatives of Logarithmic Functions

Another Example:

Determine where the graph of $f(x) = x^2 \ln x$ has horizontal tangents.