

MTH 251
LAB §3.7

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1. Find $f'(x)$ if $f(x) = \sqrt{\ln(2x+1)}$.
2. Find $f'(x)$ if $f(x) = \ln \sqrt{2x+1}$.
3. Find $\frac{dy}{dx}$ if $y = \log(\log x)$.
4. Find the derivative of $f(x) = \log \sqrt[3]{e^x \arctan(x) + 1}$.
5. Consider the equation $y = \sqrt{\frac{x+2}{3x+4}}$.
 - (a) Rewrite the right side of the equation with a power (rather than a root). Use the power rule and the chain rule to find $\frac{dy}{dx}$.
 - (b) Rewrite the right side of the equation with a power (rather than a root). Use logarithmic differentiation to find $\frac{dy}{dx}$.
6. Use logarithmic differentiation to find $\frac{dy}{dx}$ if $y = \frac{x \sin x}{\sqrt{x-1}}$.
7. Find $\frac{d}{dx} \left((\sin x)^{\sqrt{x-1}} \right)$.