

Calculus I

Miscellaneous derivatives involving logarithms, part 3

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Example

Compute the given derivative.

$$\begin{aligned}
 \frac{d}{dx} \left(\ln \sqrt[3]{4x-1} \right) &= \frac{d}{dx} \left(\ln(4x-1)^{\frac{1}{3}} \right) \\
 &= \frac{d}{dx} \left(\frac{1}{3} \ln(4x-1) \right) \\
 &= \frac{1}{3} \frac{d}{dx} (\ln(4x-1)) \\
 &= \frac{1}{3} \frac{(4x-1)'}{4x-1} \\
 &= \frac{1}{3(4x-1)}
 \end{aligned}$$