Exercise 21

Differentiate the function.

$$y = \tan[\ln(ax + b)]$$

Solution

Take the derivative of the function.

$$\begin{aligned} y' &= \frac{d}{dx}\{\tan[\ln(ax + b)]\} \\ &= \sec^2[\ln(ax + b)] \cdot \frac{d}{dx}\ln(ax + b) \\ &= \sec^2[\ln(ax + b)] \cdot \frac{1}{ax + b} \cdot \frac{d}{dx}(ax + b) \\ &= \sec^2[\ln(ax + b)] \cdot \frac{1}{ax + b} \cdot (a) \\ &= \frac{a}{ax + b}\sec^2[\ln(ax + b)] \end{aligned}$$