

**Exercise 78**

Find  $f'$  in terms of  $g'$ .

$$f(x) = g(\ln x)$$

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**Solution**

Calculate  $f'(x)$  by using the chain rule.

$$\begin{aligned} f'(x) &= \frac{d}{dx}[g(\ln x)] \\ &= g'(\ln x) \cdot \left[ \frac{d}{dx}(\ln x) \right] \\ &= g'(\ln x) \cdot \left( \frac{1}{x} \right) \\ &= \frac{g'(\ln x)}{x} \end{aligned}$$