$$
\begin{aligned}
h'(x) &= \frac{d}{dx} h(x) \\
&= \frac{d}{dx} f(g(x)) \\
&= f'(g(x))\, g'(x) \\
h''(x) &= \frac{d}{dx} h'(x) \\
&= \frac{d}{dx}\left(f'(g(x))\, g'(x) \right) \\
&= \frac{d}{dx}\left(f'(g(x)) \right) g'(x) + f'(g(x)) \frac{d}{dx} g'(x) \\
&= \left(f''(g(x)) g'(x) \right) g'(x) + f'(g(x))\, g''(x)
\end{aligned}
$$