X3.2   Prove that if function f distributes over $\uparrow$, then f is monotonic.

After trying the question, scroll down to the solution.

§   Proof:

$$
\begin{array}{lll}
& a \le b & \text{unnamed generic law} \\
= & b \;=\; a \uparrow b & \text{generic transparency} \\
\implies & f\,b \;=\; f\,(a \uparrow b) & f \text{ distributes over } \uparrow \\
= & f\,b \;=\; f\,a \uparrow f\,b & \text{unnamed generic law} \\
= & f\,a \le f\,b &
\end{array}
$$