Push forward / Jvp rule for "sin"

$$f(x) = \sin(x) = z$$

$$x \in \mathbb{R} \qquad z \in \mathbb{R}$$

$$\dot{z} = \frac{\partial f}{\partial x} \dot{x} = \cos(x)\ \dot{x}$$

$$\tilde{f}(\sin, (x, 1), (\dot{x}, 1)) = (\sin(x), 1), (\cos(x)\ \dot{x}, 1))$$