

Simplify  $\cot(x) \csc(x) + \sec(x)$ . Circle or box your final answer (but show work in between!).

$$\begin{aligned}\cot(x) \csc(x) + \sec(x) &= \frac{\cos(x)}{\sin(x)} \cdot \frac{1}{\sin(x)} + \frac{1}{\cos(x)} \\ &= \frac{\cos(x)}{\sin^2(x)} + \frac{1}{\cos(x)} \\ &= \frac{\cos(x)}{\sin^2(x)} \cdot \frac{\cos(x)}{\cos(x)} + \frac{1}{\cos(x)} \cdot \frac{\sin^2(x)}{\sin^2(x)} \\ &= \frac{\cos^2(x) + \sin^2(x)}{\sin^2(x) \cos^2(x)} \\ &= \frac{1}{\sin^2(x) \cos(x)} \\ &= \csc^2(x) \sec(x)\end{aligned}$$