Name____Solutions_____ Trigonometry, Quiz 18

Write $\cot(x) + \tan(x)$ in terms of just $\sin(x)$. Circle or box your final answer (but show work in between!).

$$\cot(x) + \tan(x) = \frac{\cos(x)}{\sin(x)} + \frac{\sin(x)}{\cos(x)}$$

$$= \frac{\cos(x)}{\sin(x)} \cdot \frac{\cos(x)}{\cos(x)} + \frac{\sin(x)}{\cos(x)} \cdot \frac{\sin(x)}{\sin(x)}$$

$$= \frac{\cos^2(x) + \sin^2(x)}{\cos(x)\sin(x)}$$

$$= \frac{1}{\cos(x)\sin(x)}$$

$$= \frac{1}{\sin\left(x + \frac{\pi}{2}\right)\sin(x)}$$