$x \in \mathbb{R}$. If $\sec(x) - \tan(x) = 2$ then what is $\sec(x) + \tan(x)$?

We will use the difference of squares:

$$\sec^2(x) - \tan^2(x) = (\sec(x) - \tan(x))(\sec(x) + \tan(x))$$

$$\Rightarrow \sec(x) + \tan(x) = \frac{\sec^2(x) - \tan^2(x)}{\sec(x) - \tan(x)}$$

$$= \frac{\sec^2(x) - \tan^2(x)}{2}$$ ← given in question

Now, we have

$$\sec^2(x) - \tan^2(x) = \frac{1}{\cos^2(x)} - \frac{\sin^2(x)}{\cos^2(x)}$$ | defns of sec & tan

$$= \frac{1 - \sin^2(x)}{\cos^2(x)}$$ | simplify fractions

$$= \frac{\cos^2(x)}{\cos^2(x)}$$ | Pythagorean identity $\sin^2(x) + \cos^2(x) = 1$

$$= 1$$

Therefore $\sec(x) + \tan(x) = \frac{1}{2}$