$$1 + \frac{\sin\theta}{1 - \sin\theta} = \csc\theta + \frac{1}{\csc\theta - 1}$$

Solution.

$$\csc\theta = \frac{1}{\sin\theta}.$$

We obtain

$$1 + \frac{\sin\theta}{1 - \sin\theta} = \frac{1}{\sin\theta} + \frac{1}{\frac{1}{\sin\theta} - 1};$$

$$1 + \frac{\sin\theta}{1 - \sin\theta} = \frac{1}{\sin\theta} + \frac{\sin\theta}{1 - \sin\theta};$$

$$1 = \frac{1}{\sin\theta}$$

$$\sin\theta = 1 \rightarrow$$

$$\theta = \frac{\pi}{2} + 2\pi n, where\ n \in Z.$$