Problem of the Week

Solution to Number One

PROBLEM: Let θ be a real number satisfying

$$\sec\theta - \tan\theta = 2.$$

Evaluate $\sec\theta + \tan\theta$.

SOLUTION: Recall that

$$\sec^2\theta - \tan^2\theta = 1$$

for all values of θ. Since

$$\sec^2\theta - \tan^2\theta = (\sec\theta - \tan\theta)(\sec\theta + \tan\theta),$$

we conclude that

$$\sec\theta + \tan\theta = \frac{1}{2}.$$