Answer on Question #68512 Math / Trigonometry

sec alpha = 5/4, find value of tan alpha/1 + tan square alpha

Solution:

$$\sec\alpha = \frac{5}{4}$$

$$\cos\alpha = \frac{1}{\sec\alpha} = \frac{4}{5}, \sin\alpha = \sqrt{1-\cos^2\alpha} = \sqrt{1-\left(\frac{4}{5}\right)^2} = \frac{3}{5}.$$

$$\tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{3}{4}$$

So

$$\frac{\tan\alpha}{1+\tan^2\alpha} = \frac{\frac{3}{4}}{1+\left(\frac{3}{4}\right)^2} = \frac{12}{25} = 0.48$$

Answer: $\frac{12}{25} = 0.48$