Answer on Question #46305 – Math – Trigonometry

1. If $\tan y = 0.404$, where y is acute, find $\cos 2y$.
   a. 0.155
   b. 16^0
   c. 0.719
   d. 0.019

Solution.

We will transform $\cos 2y$ in next way:

$$\cos 2y = \cos^2 y - \sin^2 y = 2\cos^2 y - 1 = \frac{2}{1+\tan^2 y} - 1 = \frac{1-\tan^2 y}{1+\tan^2 y},$$

where we used $\cos^2 y + \sin^2 y = 1$ and $1 + \tan^2 y = \frac{1}{\cos^2 y}$. Now we can calculate value of $\cos 2y$:

$$\cos 2y = \frac{1-\tan^2 y}{1+\tan^2 y} = \frac{1-(0.404)^2}{1+(0.404)^2} = \frac{1-0.163216}{1+0.163216} \approx 0.719.$$

Answer:

0.719.