Answer on Question #83568 – Math – Trigonometry

Question

$$tan\theta = \sqrt{15}/15$$

$$\sin(-\theta) = -1/4$$

What is the value of $\cos(\theta)$?

$-\frac{\sqrt{15}}{60}$

$-\frac{\sqrt{15}}{4}$

$\frac{\sqrt{15}}{60}$

$\frac{\sqrt{15}}{4}$

Answer

INSTRUCTIONS:

$$\sin(-\theta) = -sin\theta$$

$$-sin\theta = -\frac{1}{4}$$

$$sin\theta = 1/4$$

FORMULA:

$$sin^2\theta + cos^2\theta = 1$$

$$tan\theta = \frac{sin\theta}{cos\theta}$$

SOLUTION:

$$cos\theta = \pm\sqrt{1 - sin^2\theta}$$

$$cos\theta = \pm\sqrt{1 - \left(\frac{1}{16}\right)}$$

$$cos\theta = \pm\frac{\sqrt{15}}{4}$$

NOW, $sin\theta = 1/4$, if, $cos\theta = -\sqrt{15}/4$, $tan\theta = \frac{sin\theta}{cos\theta} = \frac{\frac{1}{4}}{-\frac{\sqrt{15}}{4}} = -\sqrt{15}/15$, which is not given in the problem…

SO, $cos\theta = \sqrt{15}/4$,

$$sin\theta = 1/4$$

$$tan\theta = \frac{\frac{1}{4}}{\frac{\sqrt{15}}{4}} = \frac{1}{\sqrt{15}} = \frac{\sqrt{15}}{\sqrt{15} * \sqrt{15}} = \frac{\sqrt{15}}{15} (cross\ checking\ with\ the\ problem)$$

SO, our answer is $cos\,\theta = \frac{\sqrt{15}}{4}$.

Answer: $cos\,\theta = \frac{\sqrt{15}}{4}$.