

Answer on Question # 31985 – Math – Geometry

Given triangle ABC and side $a = 20$; side $b = 21$. Find the measurement of angle A if angle B is a right angle.

Solution.

As ABC is a right triangle we can write that

$$\sin(A) = \frac{a}{b} \rightarrow \sin(A) = \frac{20}{21}$$

Take the inverse sine of both sides:

$$A = \pi - \sin^{-1}\left(\frac{20}{21}\right) + 2\pi n_1, \quad n_1 \in \mathbb{Z}$$

or

$$A = \sin^{-1}\left(\frac{20}{21}\right) + 2\pi n_2 \quad \text{for } n_2 \in \mathbb{Z}.$$

So

$$A \approx 57.296(6.283n + 1.88) \text{ and } n \in \mathbb{Z} \quad (1)$$

$$A \approx 57.296(6.283n + 1.26) \text{ and } n \in \mathbb{Z} \quad (2)$$

As, angle A is in the right triangle ABC we have that $\text{angle}(A) + \text{angle}(C) = 90\text{deg}$. Thus, we need to chose (2) with $n=0$, because in (1) we obtain that $\text{angle}(A) > 100\text{deg}$.

$$A \approx 57.296 * 1.26 = 72.193$$