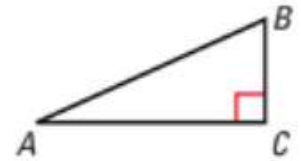


7.7 Solve Right Triangles

Inverse Trigonometric Ratios

Let $\angle A$ be an acute angle.



Inverse Tangent If $\tan A = x$, then $\tan^{-1} x = m\angle A$.

$$\tan^{-1} \frac{BC}{AC} = m\angle A$$

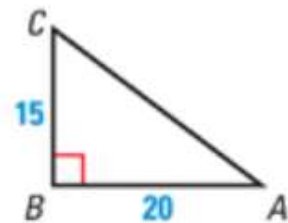
Inverse Sine If $\sin A = y$, then $\sin^{-1} y = m\angle A$.

$$\sin^{-1} \frac{BC}{AB} = m\angle A$$

Inverse Cosine If $\cos A = z$, then $\cos^{-1} z = m\angle A$.

$$\cos^{-1} \frac{AC}{AB} = m\angle A$$

Use a calculator to approximate the measure of $\angle A$ to the nearest tenth of a degree.



Solution

Because $\tan A = \frac{15}{20} = \frac{3}{4} = 0.75$, $\tan^{-1} 0.75 = m\angle A$. Use a calculator.

$$\tan^{-1} 0.75 \approx 36.86989765 \dots$$

► So, the measure of $\angle A$ is approximately 36.9° .

Let $\angle A$ and $\angle B$ be acute angles in two right triangles. Use a calculator to approximate the measures of $\angle A$ and $\angle B$ to the nearest tenth of a degree.

a. $\sin A = 0.87$

b. $\cos B = 0.15$

Solution

a. $m\angle A = \sin^{-1} 0.87 \approx 60.5^\circ$

b. $m\angle B = \cos^{-1} 0.15 \approx 81.4^\circ$