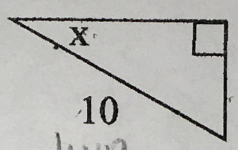
Inverse Right Triangle Trigonometry

In a right triangle, to find the measure of an angle, we can use inverse trigonometric ratios.

Examples: Solve for x.

Set up the trigonometric ratio based on what is known. Use the inverse trigonometric function of both sides of the equation to find the measure of the angle that will yield the ratio.

1)



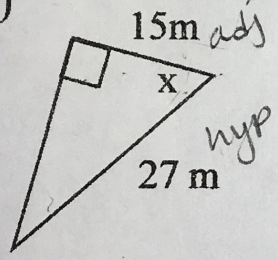
$\sin x = \frac{3}{10}$

$\sin^{-1}(\sin x) = \sin^{-1}\left(\frac{3}{10}\right)$

$m\angle x = \sin^{-1}\left(\frac{3}{10}\right)$

$m\angle x \approx 17.46°$

2)



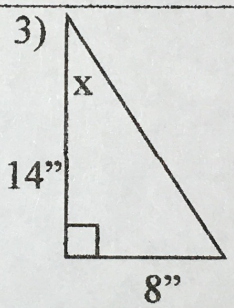
$\cos x = \frac{15}{27}$

$\cos^{-1}(\cos x) = \cos^{-1}\left(\frac{15}{27}\right)$

$m\angle x = \cos^{-1}\left(\frac{15}{27}\right)$

$m\angle x \approx 56.25°$

3)



$\tan x = \frac{8}{14}$

$\tan^{-1}(\tan x) = \tan^{-1}\left(\frac{8}{14}\right)$

$m\angle x = \tan^{-1}\left(\frac{8}{14}\right)$

$m\angle x \approx 29.74°$

* Inverse trig UNDOES a specific trig function to find the angle measure, so answer should be labeled in degrees!