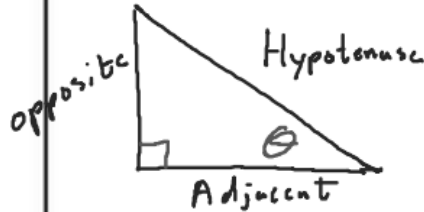


What you'll Learn About

- Right Triangle Trigonometry/ Two Famous Triangles
- Evaluating Trig Functions with a calculator/Applications of right triangle trig

θ - theta

The six trigonometric functions



Sine $\rightarrow \sin \theta = \frac{\text{opposite}}{\text{Hypotenuse}} \left(\frac{y}{r}\right)$

Cosine $\rightarrow \cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}} \left(\frac{x}{r}\right)$

Tangent $\rightarrow \tan \theta = \frac{\text{opposite}}{\text{Adjacent}} \left(\frac{y}{x}\right)$

Secant $\rightarrow \sec \theta = \frac{1}{\cos \theta} = \frac{\text{Hypotenuse}}{\text{Adjacent}} \left(\frac{r}{x}\right)$

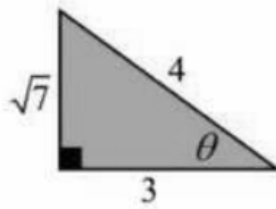
Cosecant $\rightarrow \csc \theta = \frac{1}{\sin \theta} = \frac{\text{Hypotenuse}}{\text{opposite}} \left(\frac{r}{y}\right)$

Cotangent $\rightarrow \cot \theta = \frac{1}{\tan \theta} = \frac{\text{Adjacent}}{\text{opposite}} \left(\frac{x}{y}\right)$

SOH - CAH - TOA
 i o y o d y a o d
 n p p s j p n p j
 p o t p o t

SOH-CAH-TOA

Find the values of all six trigonometric functions.



$$\sin \theta = \frac{\sqrt{7}}{4}$$

$$\csc \theta = \frac{4}{\sqrt{7}}$$

$$\cos \theta = \frac{3}{4}$$

$$\sec \theta = \frac{4}{3}$$

$$\tan \theta = \frac{\sqrt{7}}{3}$$

$$\cot \theta = \frac{3}{\sqrt{7}}$$

$$a^2 + b^2 = c^2$$

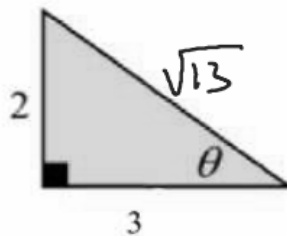
$$x^2 + y^2 = r^2$$

$$3^2 + 2^2 = r^2$$

$$9 + 4 = r^2$$

$$13 = r^2$$

$$\sqrt{13} = r$$



$$\sin \theta = \frac{2}{\sqrt{13}}$$

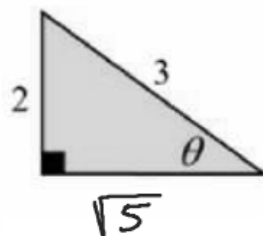
$$\csc \theta = \frac{\sqrt{13}}{2}$$

$$\cos \theta = \frac{3}{\sqrt{13}}$$

$$\sec \theta = \frac{\sqrt{13}}{3}$$

$$\tan \theta = \frac{2}{3}$$

$$\cot \theta = \frac{3}{2}$$



$$\sin \theta = \frac{2}{3}$$

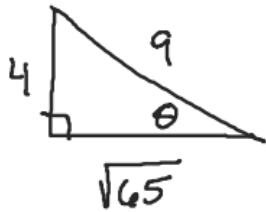
$$\csc \theta = \frac{3}{2}$$

$$\cos \theta = \frac{\sqrt{5}}{3}$$

$$\sec \theta = \frac{3}{\sqrt{5}}$$

$$\tan \theta = \frac{2}{\sqrt{5}}$$

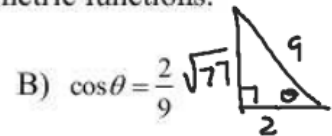
$$\cot \theta = \frac{\sqrt{5}}{2}$$



Assume that θ is an acute angle in a right triangle satisfying the given conditions. Evaluate the remaining trigonometric functions.

A) $\sin \theta = \frac{4}{9}$

$\csc \theta = \frac{9}{4}$



$\cos \theta = \frac{\sqrt{65}}{9}$

$\sec \theta = \frac{9}{\sqrt{65}}$

$\sin \theta = \frac{\sqrt{77}}{9}$

$\tan \theta = \frac{4}{\sqrt{65}}$

$\cot \theta = \frac{\sqrt{65}}{4}$

$\tan \theta = \frac{\sqrt{77}}{2}$

$\csc \theta = \frac{9}{\sqrt{77}}$

$\sec \theta = \frac{9}{2}$

$\cot \theta = \frac{2}{\sqrt{77}}$



C) $\tan \theta = \frac{9/4}{9}$



D) $\cot \theta = \frac{2}{9}$



E) $\csc \theta = \frac{10}{7}$

F) $\sec \theta = \frac{4}{3}$



$$\frac{.799}{1} = \frac{799}{1000}$$



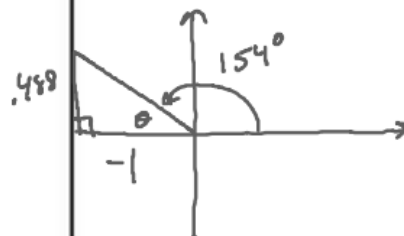
Evaluate using a calculator. Make sure your calculator is in the correct mode. Give answers to 3 decimal places and then draw the triangle that represents the situation.

A) $\sin 53^\circ = .799$

B) $\cos \frac{2\pi}{5}$

C) $\tan 154^\circ = -\frac{.488}{1}$

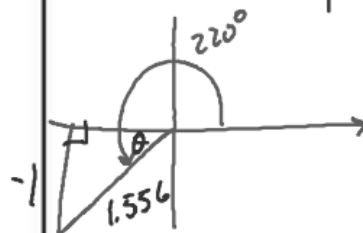
D) $\cot \frac{\pi}{9}$



$\frac{\text{Hypot}}{\text{opp}}$

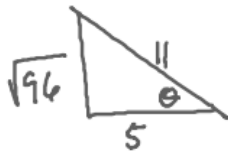
E) $\csc 220^\circ = -\frac{1.556}{1}$

F) $\sec \frac{8\pi}{5}$



II	I
(-,+)	(+,+)
(-, -)	(+, -)
III	IV

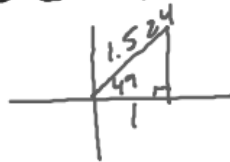
Add
Oppo



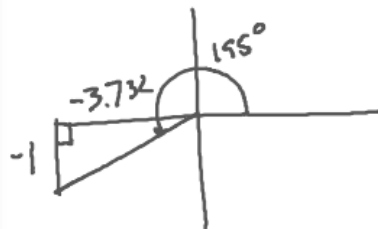
$$\sin 74^\circ = .961$$



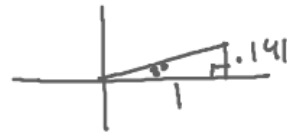
$$\sec 49^\circ = \frac{1}{\cos 49^\circ} = \frac{1.524}{1}$$



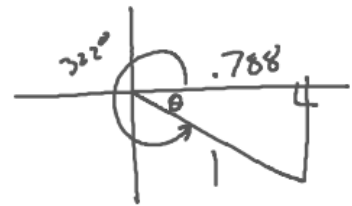
$$\cot 195^\circ = \frac{1}{\tan 195^\circ} = \frac{3.732}{1}$$



$$\tan 8^\circ = .141$$

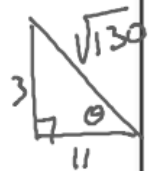


$$\cos 322^\circ = .788$$



$$\cos \theta = \frac{5}{11}$$

$$\cot = \frac{11}{3}$$



What you'll Learn About

- Trig functions of any angle/Trig functions of real numbers
- Periodic Functions/The Unit Circle

Point P is on the terminal side of angle θ . Evaluate the six trigonometric functions for θ .

A) (5, 4)

B) (-3, 4)

C) (-2, -5)

D) (-4, -1)

E) (0, -3)

F) (3, 0)