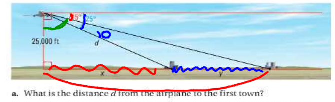
Jan 11-11:30 AM

★ **EXTENDED RESPONSE** A passenger in an airplane sees two towns directly to the left of the plane.



a. What is the distance d from the airplane to the first town?
b. What is the horizontal distance x from the airplane to the first town?
c. What is the distance y between the two towns? *Explain* the process you used to find your answer.

$90-25 = 65°$

$65+10$

$y = z - x$

$\boxed{y = 39,688.5}$

$\tan 65 = \frac{x}{25000}$

$\cos 65 = \frac{25000}{d}$

$\tan 75 = \frac{z}{25000}$

$z = 93,301.27$

$d = 59,157.6$

$x = 53,612.67$

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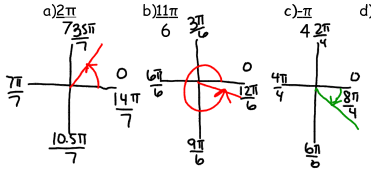
Draw an angle with the given measure in standard position.

a) $\frac{2\pi}{7}$ b) $\frac{11\pi}{6}$ c) $\frac{-\pi}{4}$ d) $\frac{5\pi}{3}$



e) 135° f) 290° g) 220° h) -110°

Feb 10-8:45 PM

Coterminals

Add or subtract 360 or 2π

Need Common denominator!

Find 1 positive and 1 negative coterminal angle for each angle listed.

a) $\frac{2\pi}{7}$ $2\pi = \frac{14\pi}{7}$

$\frac{2\pi}{7} + \frac{14\pi}{7} = \boxed{\frac{16\pi}{7}}$

$\frac{2\pi}{7} - \frac{14\pi}{7} = \boxed{\frac{-12\pi}{7}}$

b) $\frac{11\pi}{6}$ $2\pi = \frac{12\pi}{6}$

$\frac{11\pi}{6} + \frac{12\pi}{6} = \boxed{\frac{23\pi}{6}}$

$\frac{11\pi}{6} - \frac{12\pi}{6} = \boxed{\frac{-\pi}{6}}$

c) $\frac{-\pi}{4}$ $2\pi = \frac{8\pi}{4}$

$-\frac{\pi}{4} + \frac{8\pi}{4} = \boxed{\frac{7\pi}{4}}$

$-\frac{\pi}{4} - \frac{8\pi}{4} = \boxed{\frac{-9\pi}{4}}$

d) $\frac{5\pi}{3}$

e) 135°

$135+360 = \boxed{495°}$

$135-360 = \boxed{-225°}$

f) 290°

$290+360 = \boxed{650°}$

$290-360 = \boxed{-70°}$

g) 220°

$220+360 = \boxed{580°}$

$220-360 = \boxed{-140°}$

h) -110°

Jan 17-10:35 AM

Convert between degrees and radians

Multiply by $\frac{180}{\pi}$ or $\frac{\pi}{180}$ and REDUCE

a) $\frac{2\pi}{7}$

b) $\frac{11\pi}{6} \cdot \frac{180}{\pi} = 11 \cdot 30 = \boxed{330°}$

c) $\frac{-\pi}{4} \cdot \frac{180}{\pi} = \boxed{-45°}$

d) $\frac{5\pi}{3}$

e) 135°

f) $290° \cdot \frac{\pi}{180} = \frac{290\pi}{180} = \boxed{\frac{29\pi}{18}}$

g) $220° \cdot \frac{\pi}{180} = \frac{220\pi}{180} = \frac{22\pi}{18} = \boxed{\frac{11\pi}{9}}$

h) -110°

Jan 17-10:35 AM

Extra Credit

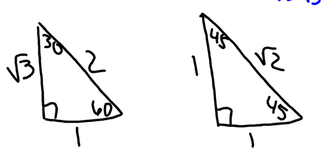
On back

1. 2 special triangles with angle measurements & side lengths
2. List 6 trig ratios and the shortcut to remember the first 3.
3.  Solve for c

Jan 11-11:58 AM

Fill in the chart using your 2 speacial triangles

	30°	45°	60°
Radians			
sinθ	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cosθ	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tanθ	$\frac{1}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{\sqrt{3}}{3}$	1	$\frac{\sqrt{3}}{1}$
	30°	45°	60°
sin cscθ	$\frac{2}{1}$	$\frac{\sqrt{2}}{1}$	$\frac{2}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{2\sqrt{3}}{3}$
cos secθ	$\frac{2}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{2\sqrt{3}}{3}$	$\frac{\sqrt{2}}{1}$	2
tan cotθ	$\frac{\sqrt{3}}{1}$	1	$\frac{1}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{\sqrt{3}}{3}$



sin csc
cos sec
tan cot

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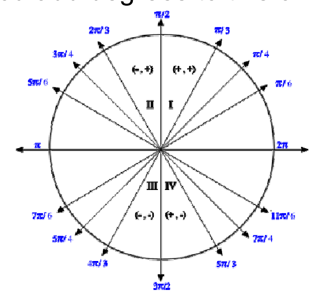
Can you add degrees to this circle...



Jan 10-12:19 PM

Homework questions...

LETS DLT!

Apr 1-10:11 AM

So far.

Right Triangle Trig - listing ratios, solving side lengths, WP
3 new trig functions - csc, sec, cot
Graphing angles in degrees
Radians - learning, graphing
Coterminal angles in degrees and radians
Converting angles between degrees and radians

Feb 10-8:57 PM

1st job -Evaluate 6 trig functions given point

EXAMPLE: You are given a point...on a circle

Let (−4, 3) be a point on the terminal side of an angle θ in standard position. Evaluate the six trigonometric functions of θ.

Solution

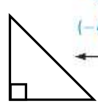
Use the Pythagorean theorem to find the value of r.

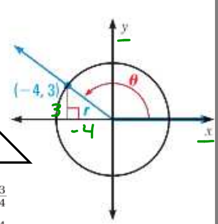
$r = \sqrt{x^2 + y^2} = \sqrt{(-4)^2 + 3^2} = \sqrt{25} = 5$

Using $x = -4$, $y = 3$, and $r = 5$, you can write the following:

$\sin\theta = \frac{y}{r} = \frac{3}{5}$ $\cos\theta = \frac{x}{r} = -\frac{4}{5}$ $\tan\theta = \frac{y}{x} = -\frac{3}{4}$

$\csc\theta = \frac{r}{y} = \frac{5}{3}$ $\sec\theta = \frac{r}{x} = -\frac{5}{4}$ $\cot\theta = \frac{x}{y} = -\frac{4}{3}$



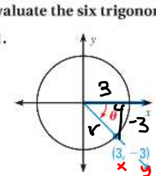


Mar 30-3:03 PM

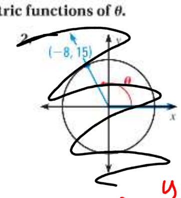
YOU DO THE WORK!!!!

Evaluate the six trigonometric functions of θ.

1\.



2\.



$x^2+y^2=r^2$
$3^2+(-3)^2=r^2$
$9+9=r^2$
$\sqrt{r^2}=\sqrt{18}$
$r=3\sqrt{2}$

$\sin\theta=\frac{y}{r}=\frac{-3}{3\sqrt{2}}=\frac{-1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\boxed{\frac{-\sqrt{2}}{2}}$

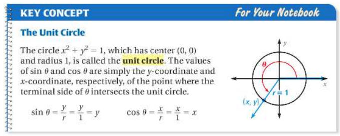
$\cos\theta=\frac{x}{r}=\frac{3}{3\sqrt{2}}\ \frac{1}{\sqrt{2}}=\boxed{\frac{\sqrt{2}}{2}}$

$\tan\theta=\frac{y}{x}=\frac{-3}{3}=\boxed{-1}$

Apr 9-7:14 PM

2nd job

UNIT CIRCLE - same concept...what if the radius is 1...



Sinθ = y Cscθ = 1/y

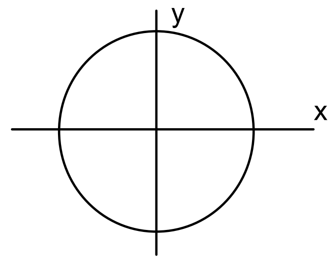
Cosθ =x Secθ = 1/x

Tanθ =y/x Cotθ = x/y

Mar 30-3:04 PM

The unit circle gives us our axis trig values

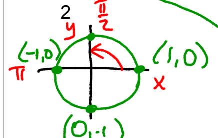
FOUR CASES OF QUADRANTAL ANGLES:



Apr 10-7:29 PM

List 6 trig functions for...

a) $\frac{\pi}{2}$ (0,1) $\frac{\pi}{2}$



(x, y)
(Cos, Sin)

(0,1)

b)π (-1,0)
Cos sin

Sinθ = $\boxed{1}$ cscθ = $\frac{1}{y} = \frac{1}{1} = \boxed{1}$

cosθ = $\boxed{0}$ secθ = $\frac{1}{x} = \frac{1}{0} = \boxed{und}$

tanθ = $\frac{1}{0}$ $\boxed{und}$ cotθ = $\frac{x}{y} = \frac{0}{1} = \boxed{0}$

c)-90° d)0°

Jan 10-12:10 PM

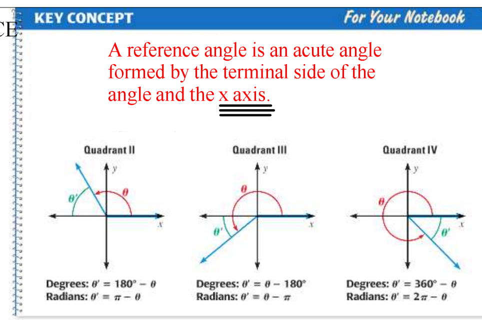
REFERENCE ANGLES

symbol

The

Books

Way

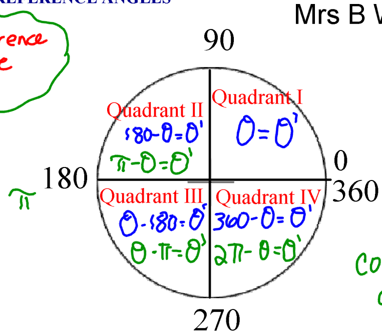


Mar 30-3:23 PM

To Find **REFERENCE ANGLES**

θ' = reference angle

Mrs B Way



Common denominator to add/subtract fractions

Apr 11-8:31 AM

3rd Job HINT: DRAW IT!

FIND THE REFERENCE ANGLE FOR THE FOLLOWING:

In degrees...

1. 325° 2. 99° 3. -22°

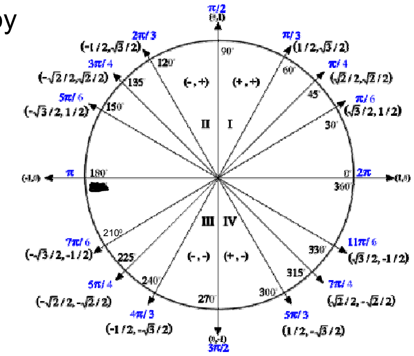
Apr 10-7:58 PM

In Radians

4. 5 π/6 5. -4π/5

Jan 16-4:38 PM

byby



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Jan 17-11:05 AM

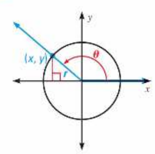
Chp 13.3
GENERAL DEFINITIONS OF TRIGONOMETRIC FUNCTIONS

KEY CONCEPT *For Your Notebook*

Job 1

General Definitions of Trigonometric Functions

Let θ be an angle in standard position, and let (x, y) be the point where the terminal side of θ intersects the circle $x^2 + y^2 = r^2$. The six trigonometric functions of θ are defined as follows:



$\sin\theta = \frac{y}{r}$ $\qquad \csc\theta = \frac{r}{y}, y \neq 0$

$\cos\theta = \frac{x}{r}$ $\qquad \sec\theta = \frac{r}{x}, x \neq 0$

$\tan\theta = \frac{y}{x}, x \neq 0$ $\qquad \cot\theta = \frac{x}{y}, y \neq 0$

These functions are sometimes called *circular functions*.

Apr 1-10:05 AM