Warm up

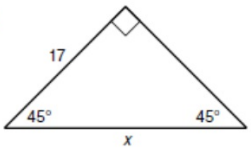
1) Draw the 30-60-90 special right triangle with a hypotenuse of 1, and label all side lengths.

2) Draw the 45-45-90 special right triangle with a hypotenuse of 1, and label all side lengths.

3) What does the sine and cosine value represent?

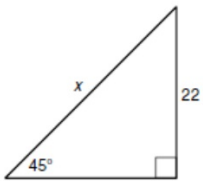
Find the value of x. Give your answers in simplest radical form.

1.



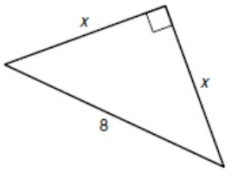
$x = 17\sqrt{2}$

2.



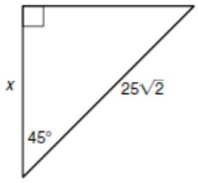
$x = 22\sqrt{2}$

3.



$x = 4\sqrt{2}$

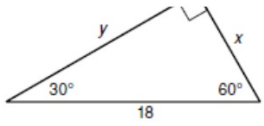
4.



$x = 25$

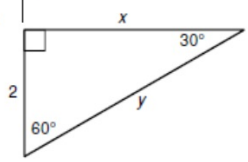
mplest radical form.

5.



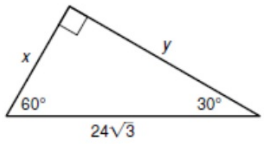
$x = 9;\ y = 9\sqrt{3}$

6.



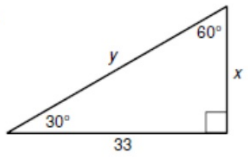
$x = 2\sqrt{3};\ y = 4$

7.



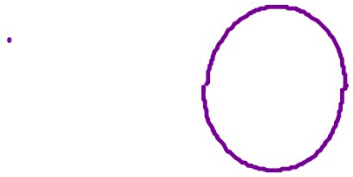
$x = 12\sqrt{3};\ y = 36$

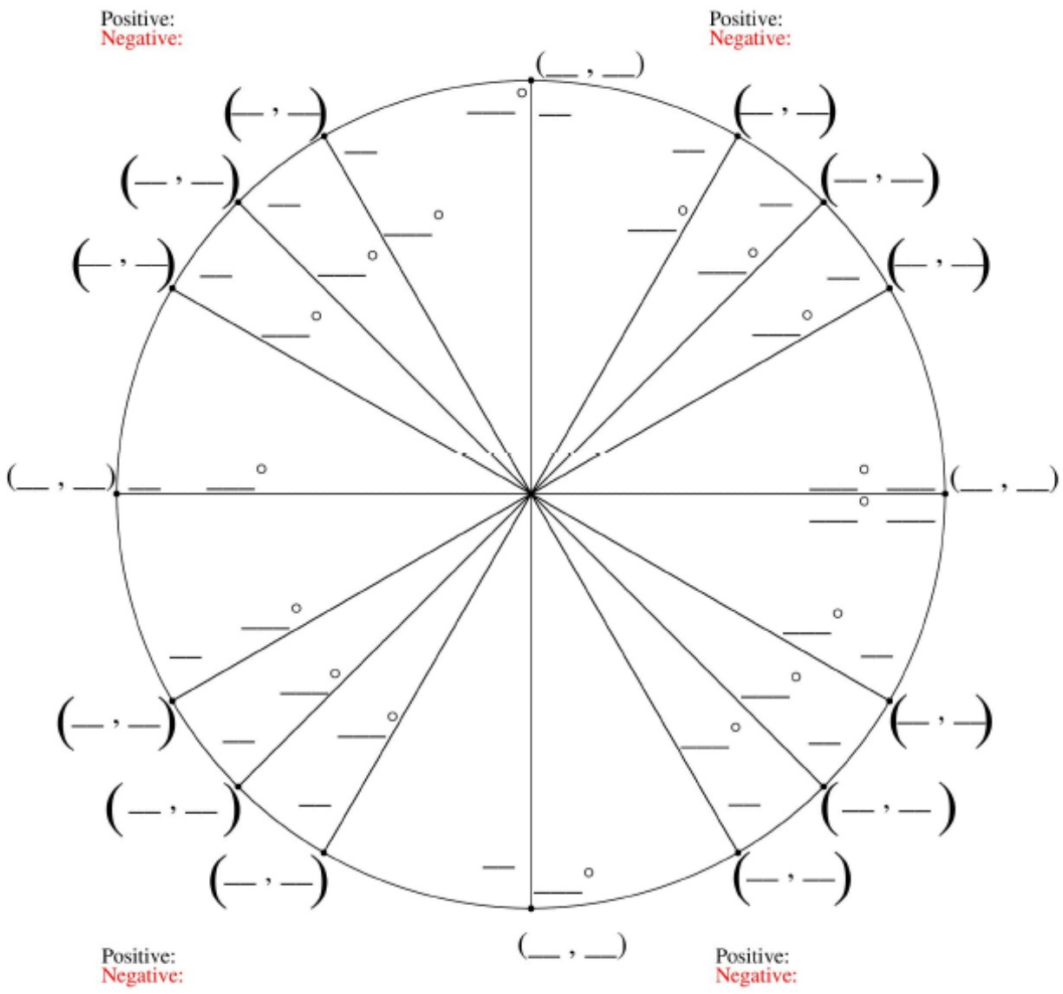
8.



$x = 11\sqrt{3};\ y = 22\sqrt{3}$

Objective:
Find the six trig values for angles using the unit circle




Positive:
Negative:
Positive:
Negative:
(__ , __)
(— , —)
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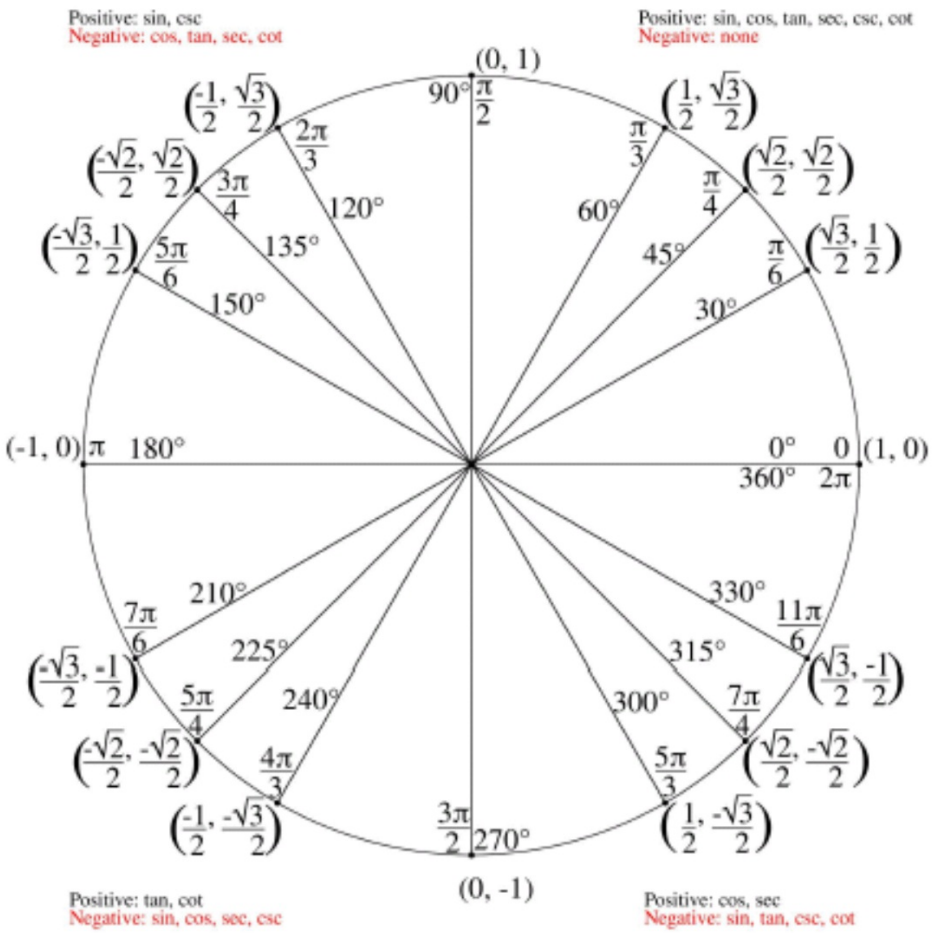
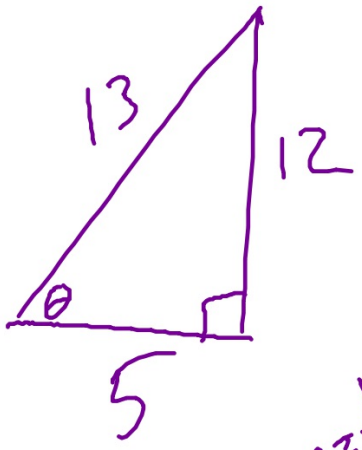
Positive:
Negative:
Positive:
Negative:

The Unit Circle



Understanding the 6 trigonometric functions

sine $\frac{\text{opp.}}{\text{hyp.}}$ $\frac{y}{1}$ SOH	**cosecant** $\frac{\text{hyp.}}{\text{opp.}}$ $\frac{1}{y}$ $\frac{1}{\sin}$
cosine $\frac{\text{adj.}}{\text{hyp.}}$ $\frac{x}{1}$ CAH	**secant** $\frac{\text{hyp.}}{\text{adj.}}$ $\frac{1}{\cos}$ $\frac{1}{x}$
tangent $\frac{\text{opp.}}{\text{adj.}}$ $\frac{y}{x}$ $\frac{\sin}{\cos}$ TOA	**cotangent** $\frac{\text{adj.}}{\text{opp.}}$ $\frac{\cos}{\sin}$ $\frac{x}{y}$



$\cot\theta = \frac{5}{12}$

$\sin\theta = \frac{12}{13}$ θ = theta

$\csc\theta = \frac{13}{12}$

Six trig values of the unit circle

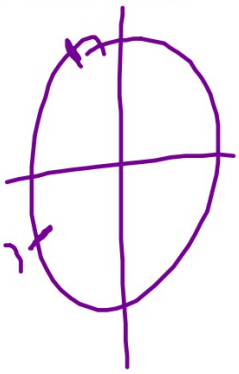
1. $\sin(\pi/4) = \frac{\sqrt{2}}{2}$

2. $\csc(7\pi/6)$ $\frac{1}{-\frac{1}{2}} = -2$

3. $\tan(3\pi/4)$ -1

4. $\cos(2\pi/3)$ $-\frac{1}{2}$

5. $\sec(2\pi)$ 1



Finding the angle given the trig value

1. $\sin\theta = \sqrt{3}/2$ $\theta = \frac{\pi}{3}, \frac{2\pi}{3}$

2. $\cos\theta = -1/2$ $\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$

3. $\tan\theta = -1$ $\theta = \frac{3\pi}{4}$ and $\frac{7\pi}{4}$

Find the six trig values given one

Examples

1. tanϕ = 7/5

2.Cosineϕ = 5/8

3. Secantϕ = 7/3

Convert Radians to degrees **Multiply by $180°/\pi$**

1. $4\pi/3$ 2. $7\pi/8$ 3. 4

Convert degrees to radians **Multiply by $\pi/180°$**

1. 45° 2. 90° 3. 180° 4. 78.5° 5. 73°45"