

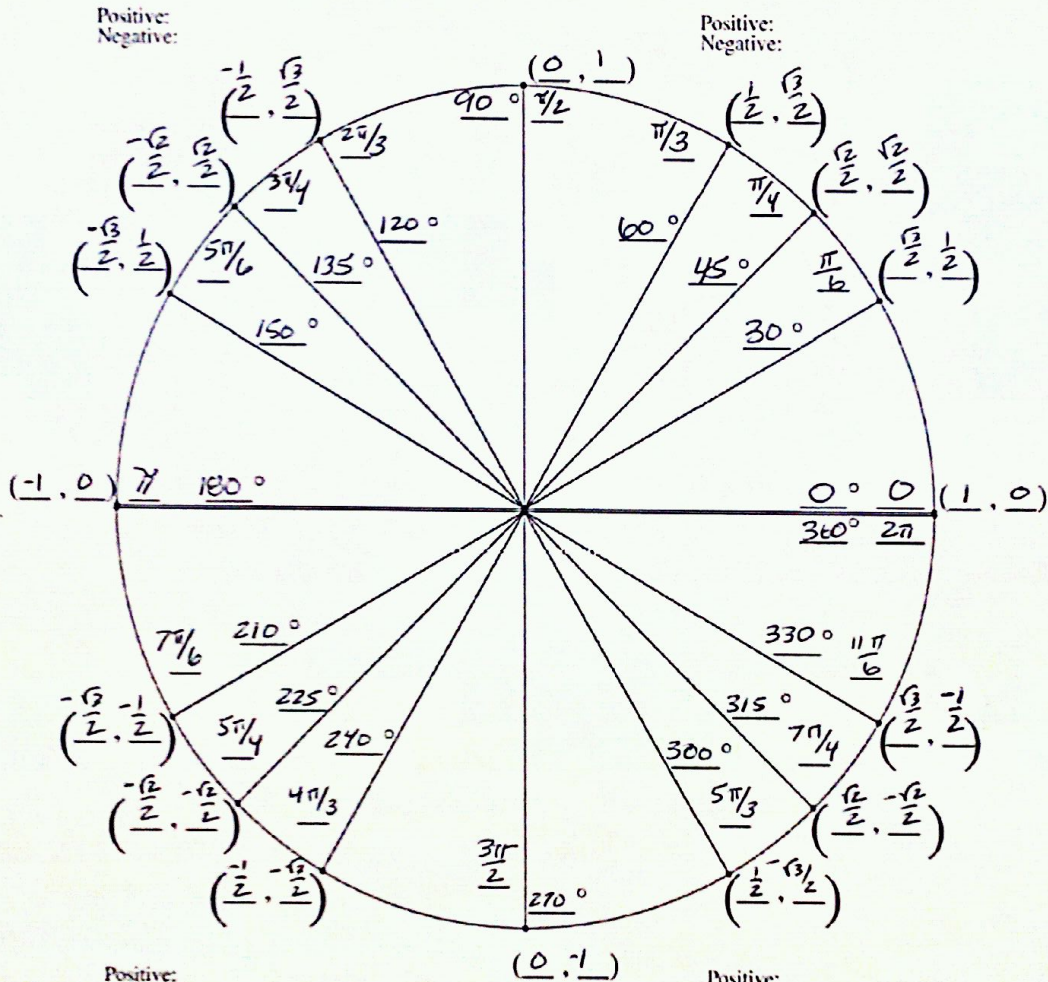
Int. Trig.

Name: _____ Date: _____

EC Review Ch. 5.1-5.3

Pd: _____

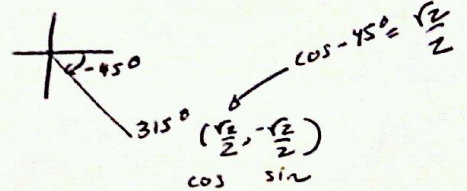
1. Construct the unit circle. All angle measures and exact values of the coordinates should be included.



2. Evaluate the following expressions using the Unit Circle.

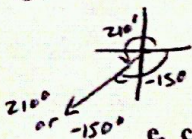
a. $\sin 210^\circ = -\frac{1}{2}$

b. $\cos -45^\circ$



$\frac{5\pi}{6} = 150^\circ$

c. $\tan \frac{-5\pi}{6} \Rightarrow \tan -150^\circ \Rightarrow \tan 210^\circ$



$\tan = \frac{\sin}{\cos} \Rightarrow \tan 210 = \frac{\sin 210}{\cos 210}$
 $= \frac{-1/2}{-\sqrt{3}/2} \Rightarrow \frac{1}{\sqrt{3}}$

d. $\cot \pi$

$\cot 180 = \frac{\cos 180}{\sin 180}$
 $= \frac{0}{0} = 0$

f. $\sec 225^\circ$

cos 225 then Flip!!

$-\frac{\sqrt{2}}{2}$ Flip = $\frac{-2}{\sqrt{2}} = \frac{-2\sqrt{2}}{2} = -\sqrt{2}$

$\frac{600}{-360}$
 $\frac{240}{240}$

Find sin 600 then Flip

$\sin 240 = -\frac{\sqrt{3}}{2}$ Flip $\csc 240 = \frac{-2}{\sqrt{3}}$
 $= -\frac{2\sqrt{3}}{3}$ answer

3. Change 110.328° to degrees, minutes, and seconds. *keep* $110^\circ 19' 41''$
 $.328(60) = 19.68$ $.68(60) = 40.8$
Round

4. Change $45^\circ 13' 31''$ to a decimal. Round to the nearest tenth?
 $45 + \frac{13}{60} + \frac{31}{3600} = 45.2252778 \approx 45.2^\circ$
tenth

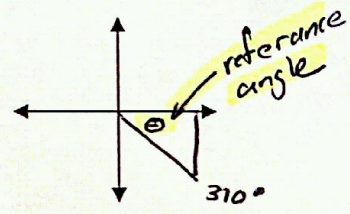
Give the angle measure represented by

5. Name two positive angles and two negative angles that are coterminal with 245° .

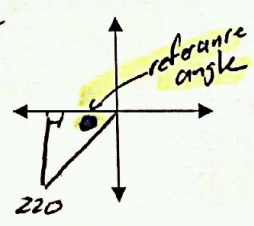
positive $\frac{245}{+360} \frac{605}{+360}$ negative $\frac{245}{-360} \frac{-115^\circ}{-360}$
 605° 965° -115° -475°

6. Find the measure of the reference angle for each of the following angles and sketch the graph.

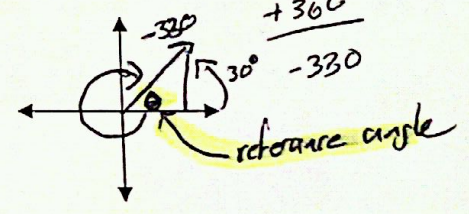
a. 670° 50°
 $\frac{-360}{310^\circ}$



b. -140° 40°
 $\frac{360}{-140} \frac{220}{-180}$

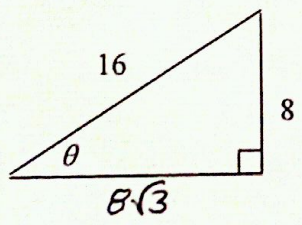


c. -1050° 30°
 $\frac{-1050}{+360} \frac{-690}{+360} \frac{-330}{-330}$



7. Find the values of all six trigonometric functions for the angle, θ in simplest form.

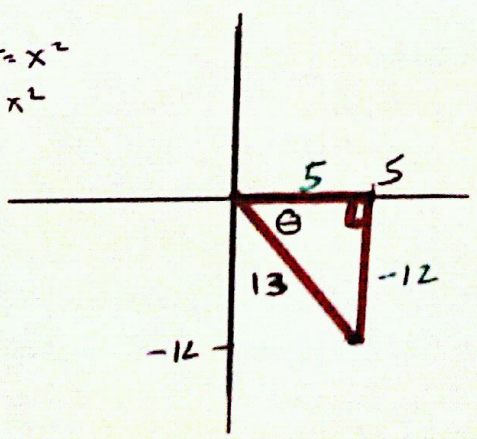
$x^2 + 8^2 = 16^2$
 $x^2 = 192$
 $x = \sqrt{192}$
 $\sqrt{64 \cdot 3}$
 $= 8\sqrt{3}$



$\sin \theta = \frac{8/16} = \frac{1}{2}$ $\csc \theta = \frac{2}{1}$
 $\cos \theta = \frac{8\sqrt{3}/16} = \frac{\sqrt{3}}{2}$ $\sec \theta = \frac{2\sqrt{3}}{3}$
 $\tan \theta = \frac{8}{8\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$ $\cot \theta = \frac{\sqrt{3}}{1}$

8. Find the values of the six trig functions for an angle in standard position if the point $(5, -12)$ lies on its terminal side.

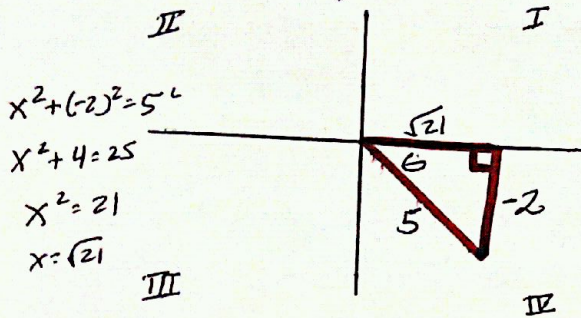
$5^2 + (-12)^2 = x^2$
 $25 + 144 = x^2$
 $169 = x^2$
 $13 = x$



$\sin \theta = \frac{-12}{13}$ $\csc \theta = \frac{13}{-12}$
 $\cos \theta = \frac{5}{13}$ $\sec \theta = \frac{13}{5}$
 $\tan \theta = \frac{-12}{5}$ $\cot \theta = \frac{5}{-12}$

$$\sin \theta = \frac{O}{H} = \frac{-2}{5}$$

9. $\sin \theta = \frac{-2}{5}$; Quadrant IV Find the values of the five other trig functions.



$$x^2 + (-2)^2 = 5^2$$

$$x^2 + 4 = 25$$

$$x^2 = 21$$

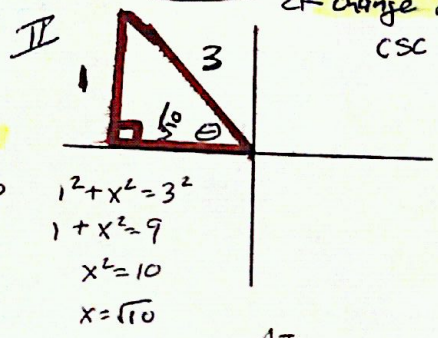
$$x = \sqrt{21}$$

$$\csc \theta = \frac{-5}{2}$$

$$\cos \theta = \frac{\sqrt{21}}{5} \quad \sec \theta = \frac{5\sqrt{21}}{21}$$

$$\tan \theta = \frac{-2}{\sqrt{21}} = \frac{-2\sqrt{21}}{21} \quad \cot \theta = \frac{-\sqrt{21}}{2}$$

10. $\csc \theta = \frac{1}{3}$; Quadrant II Find the values of the five other trig functions. SOHCAHTOA



$\csc = \frac{1}{3}$
change to
 $\csc = 3$

$$1^2 + x^2 = 3^2$$

$$1 + x^2 = 9$$

$$x^2 = 8$$

$$x = \sqrt{8}$$

change to $\csc \theta = 3$
 $\csc = \frac{H}{O} = \frac{3}{1}$

$$\sin \theta = \frac{1}{3}$$

$$\cos \theta = \frac{\sqrt{10}}{3} \quad \sec \theta = \frac{3}{\sqrt{10}} = \frac{3\sqrt{10}}{10}$$

$$\tan \theta = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10} \quad \cot \theta = \sqrt{10}$$

11. The central angle is $\frac{4\pi}{3}$, find the length of its intercepted arc in a circle with a radius of 6 cm. Round to the nearest tenth.

Arc length $s = (6) \left(\frac{4\pi}{3} \right) = \frac{24\pi}{3} = 8\pi$
 $s = r\theta$
 $8\pi = 25.133 \approx 25.1$
 $8(3.14) = 25.12 \approx 25.1$

12. An arc is 70 meters long and is intercepted by a central angle of 65° , find the diameter of the circle. Round to the nearest tenth.

Arc length $s = r\theta$
 $70 = r(1.13)$
 $\frac{70}{1.13} = r$
 $r = 61.9$
 Near diameter $d = 2r \Rightarrow 123.9$

13. Find the area and arc length of a sector with a central angle of $\frac{7\pi}{12}$, and a radius of 4m. Round to the nearest tenth.

Area $A = \frac{1}{2} r^2 \theta$
 $= \frac{1}{2} (4)^2 \left(\frac{7\pi}{12} \right)$
 $= \frac{1}{2} (16) \left(\frac{7\pi}{12} \right) = 14.7 \text{ m}^2$

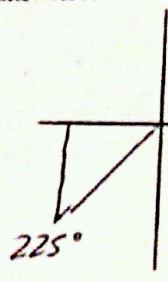
14. A sector has an area of 12 square inches and a central angle of 50° . Find the radius of the circle. Round to the nearest tenth.

$A = \frac{1}{2} r^2 \theta$
 $12 = \frac{1}{2} (r^2) \left(\frac{5\pi}{12} \right) \Rightarrow 12 = r^2 (0.654498)$
 $18.33 = r^2$
 $r = 4.28$

NO CALCULATOR!

15. Use the unit circle to find the values of the 6 trig functions. EXACT VALUES

a.) $\theta = 150^\circ$
this is in your notes



b.) $\theta = 225^\circ$
 $\sin 225^\circ = -\frac{\sqrt{2}}{2}$
 $\cos 225^\circ = -\frac{\sqrt{2}}{2}$
 $\tan 225^\circ = 1$
 $\csc \theta = \sqrt{2}$
 $\sec \theta = -\sqrt{2}$
 $\cot \theta = -1$

c.) $\theta = -30^\circ$ ← same as $\theta = 330^\circ$
 $\sin -30^\circ = -\frac{1}{2}$
 $\cos -30^\circ = \frac{\sqrt{3}}{2}$
 $\tan -30^\circ = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$
 $\csc -30^\circ = -2$
 $\sec -30^\circ = \frac{2}{\sqrt{3}}$
 $\cot -30^\circ = -\sqrt{3}$