

Wed 01/17 SAT NC

Which of the following is equivalent to $9^{3/4}$?

~~A) $3\sqrt{9}$~~

~~B) $4\sqrt{9}$~~

C) $\sqrt{3}$

D) $3\sqrt{3}$

$$x^{\frac{m}{n}} = n\sqrt[n]{x^m}$$

$$4\sqrt[4]{9^3}$$

$$4\sqrt[4]{(3^2)^3} = 4\sqrt[4]{3^6} = 3^{6/4} = 3^{3/2}$$

$$\sqrt[4]{3 \cdot 3^2} = 3\sqrt{3}$$

$$= \sqrt{3^3}$$

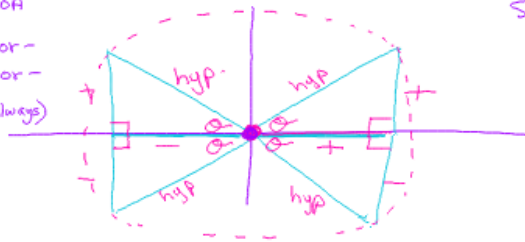
$$= \sqrt{3^2 \cdot 3}$$

$$= 3\sqrt{3}$$

Section 4.3: Day 2

SOH CAH TOA

adj + or -
opp + or -
hyp + (always)



Signs +
- / +
- / -

$x \rightarrow \cos$

$y \rightarrow \sin$

adj + or -

opp + or -

hyp. always +

Sample 1

Given $\cos \theta = \frac{2}{3}$ adj +
hyp + (must be +)

Find $\sin \theta$ and $\cot \theta$ if $\cot \theta$ is < 0

SOH CAH TOA

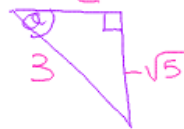
$$\sin = \frac{\text{opp}}{\text{hyp}}$$

$$\cot = \frac{\text{adj}}{\text{opp}}$$

given $\cot$ has to be -

adj +
opp -
hyp +

Quadrant IV



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

$$4 + x^2 = 9$$

$$x^2 = 5, x = -\sqrt{5}$$

$$\sin = \frac{\text{opp}}{\text{hyp}} = \frac{-\sqrt{5}}{3}$$

$$\cot = \frac{\text{adj}}{\text{opp}} = \frac{2}{-\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = -\frac{2\sqrt{5}}{5}$$

SOH CAH TOA

Sample problem #1



Given $\cos \theta = \frac{2}{3}$

Find $\sin \theta$ and $\cot \theta$ if $\cot \theta < 0$

adj +
opp -
hyp +

Quadrant
IV

Sign
given $\cot = \frac{\text{adj}}{\text{opp}}$



$$\cos = \frac{2}{3}$$

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

$$4 + x^2 = 9$$

$$x^2 = 5$$

$$x = -\sqrt{5}$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{-\sqrt{5}}{3}$$

$$\cot = \frac{\text{adj}}{\text{opp}} = \frac{2}{-\sqrt{5}} = -\frac{2\sqrt{5}}{5}$$

p 348 #43-48

43-48

45-



Opp -
Adj +
Hyp +

IV

TOA
Find $\tan \theta$ and $\sec \theta$ if $\sin \theta = -\frac{2}{5}$ and $\cos \theta > 0$

$$\cos = \frac{\text{adj}}{\text{hyp}}$$



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

$$4 + x^2 = 25$$

$$x^2 = 21$$

$$x = \sqrt{21}$$

$$\tan = \frac{\text{opp}}{\text{adj}} = \frac{-2}{\sqrt{21}} = -\frac{2\sqrt{21}}{21}$$

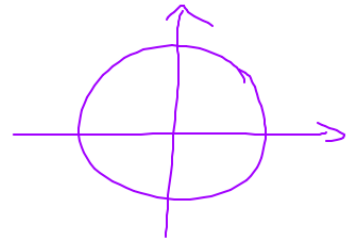
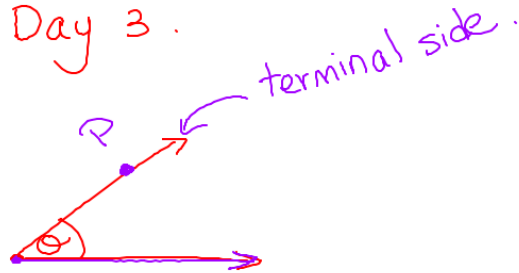
$$\sec \theta = \frac{\text{hyp}}{\text{adj}} = \frac{5}{\sqrt{21}} = \frac{5\sqrt{21}}{21}$$

$$46- \cot = \frac{\text{adj}}{\text{opp}} = \frac{3}{-7} = -\frac{3}{7}$$

Sec < 0
III

Hint
 $\sec = \frac{H}{A}$

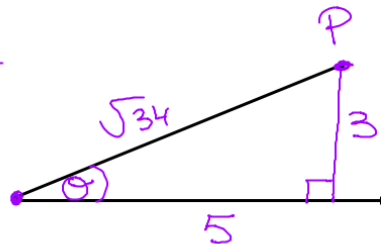
Section 4.3 Day 3.



Example 2 p 340

Let θ be the acute angle in standard position whose terminal side contains the point $(5, 3)$. Find the six trigonometric functions of θ .

$$\begin{aligned}\cos \theta &= \frac{5}{\sqrt{34}} \cdot \frac{\sqrt{34}}{\sqrt{34}} \\ &= \frac{5\sqrt{34}}{34}\end{aligned}$$



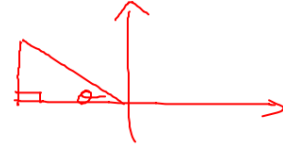
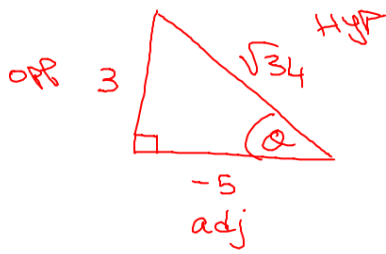
$$P(5, 3)$$

$$5^2 + 3^2 = 25 + 9 = 34$$

Example 3 :

by a Point Not in Q1

Let θ be any angle in standard position whose terminal side contains the point $(-5, 3)$. Find the six trigonometric functions of θ .



P 340

$$\cos = \frac{A}{H}$$

$$\sec = \frac{\sqrt{34}}{-5} = -\frac{\sqrt{34}}{5} = -\frac{\sqrt{34}}{5}$$

P 347 # 7-12

8) P(-4, 6) → simplify P(-2, -3)

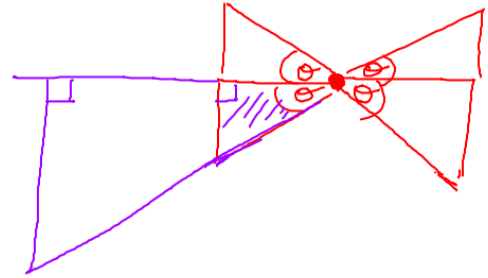
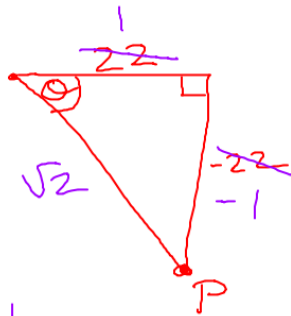
12) P(22, -22)



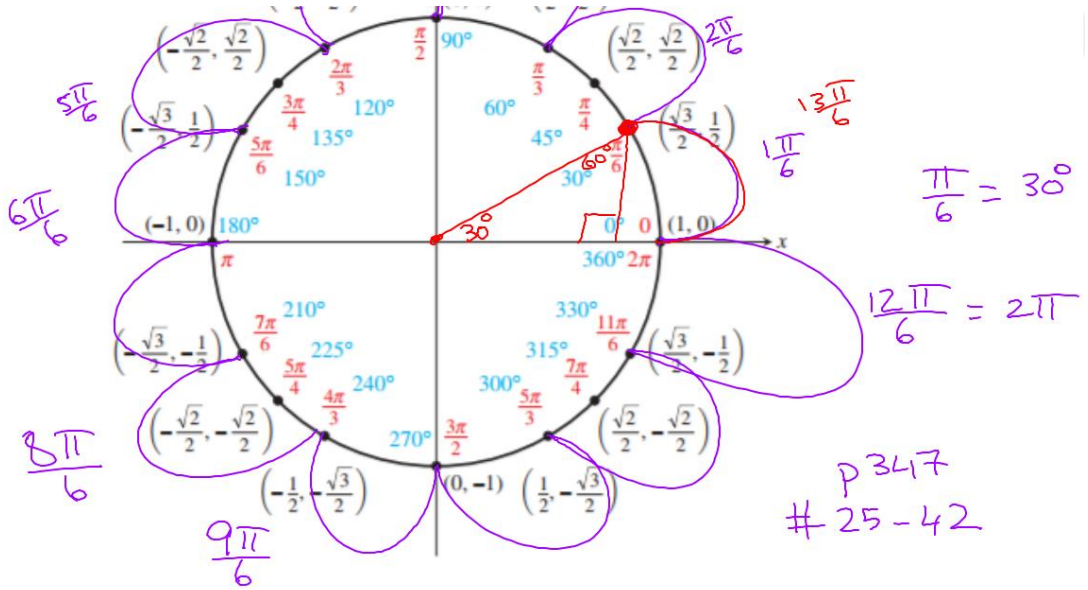
trig Functions

(1, -1)

$$\tan \theta = \frac{O}{A} = -\frac{1}{1} = -1$$

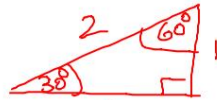


p346



#29

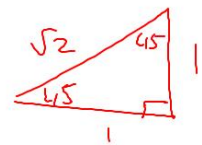
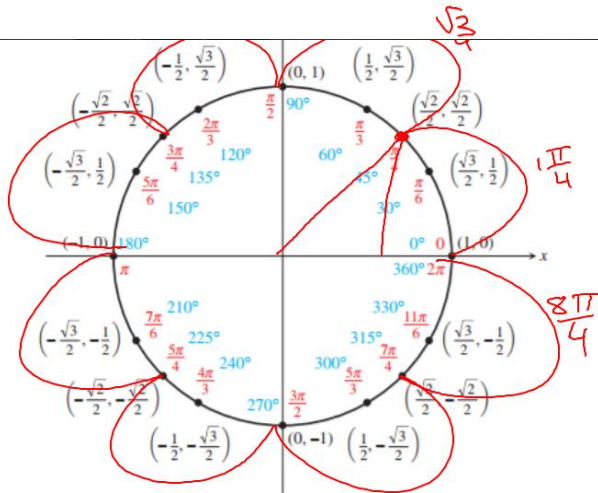
$$\sin \frac{13\pi}{6}$$



$$\cos 60^\circ = \frac{1}{2}$$



p347



$$37. \cot \frac{17\pi}{4} = 1$$

31.