




SPECIAL ANGLES
Unit Circle


4.4
(Day 6) Special Angles


Objective:
Solve trigonometric problems using Special Angles.


1. $\sin 90^\circ = \frac{y}{r} = \frac{1}{1} = 1$ 


3. $\sin 135^\circ = \frac{y}{r} = \frac{\sqrt{2}}{2}$ 


5. $\sin 330^\circ = \frac{y}{r} = \frac{-1/2}{1} = -\frac{1}{2}$ 



7. $\sin 225^\circ = \frac{y}{r} = \frac{-\sqrt{2}/2}{1} = -\frac{\sqrt{2}}{2}$ 



9. $\sin \pi = \frac{y}{r} = \frac{0}{1} = 0$ 



11. $\sin \theta = \frac{1}{2}$
 $\theta = 30^\circ, 150^\circ$ 

13. $\sin \theta = -1 = \frac{-1}{1}$
 $\theta = 270^\circ$ 

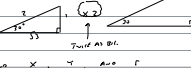
15. $\cos \theta = \frac{\sqrt{2}}{2}$
 $\theta = 45^\circ, 315^\circ$ 

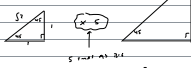
17. $\cos 170^\circ = \sin \theta$
STEP 1: $\cos 170^\circ = -\frac{1}{2}$ 
STEP 2: $\sin \theta = -\frac{1}{2}$ 
 $\theta = 210^\circ, 330^\circ$

19. $\cos \frac{\pi}{3} = \sin \theta$
STEP 1: since $\cos \frac{\pi}{3} = \frac{1}{2}$ 
STEP 2: subtract $\pi/2$ and solve for θ
 $\sin \theta = \frac{1}{2}$ 
 $\theta = 30^\circ, 150^\circ$

21. $\sin \frac{2\pi}{3} = \cos \theta$
STEP 1: $\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}$ 
 $\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}$
STEP 2: subtract $\pi/2$ and solve
 $\cos \theta = \frac{\sqrt{3}}{2}$ 
 $\theta = 30^\circ, 330^\circ$

SINUS AND COSINE TRIANGLES

1. 
From x , y , and r
 $x = r \cos \theta$ $y = r \sin \theta$ $r = \frac{y}{\sin \theta}$

2. 
From x , y , and r
 $x = r \cos \theta$ $y = r \sin \theta$ $r = \frac{y}{\sin \theta}$

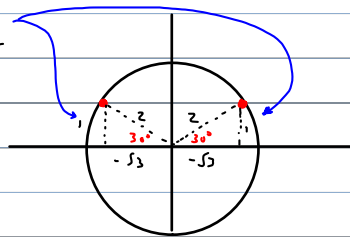
Solve for θ $0^\circ \leq \theta < 360^\circ$

1. $\sin \theta = \frac{1}{2} = r$

REF $\angle = 30^\circ$

\angle is QUAD I = 30°

\angle is QUAD II = $180^\circ - 30^\circ = 150^\circ$



2. $\cos \theta = -\frac{\sqrt{3}}{2}$ find θ

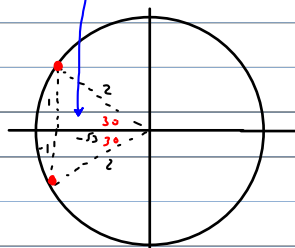
REF \angle 's = 30°

θ in QUAD II

$180^\circ - 30^\circ = 150^\circ$

θ in QUAD III

$180^\circ + 30^\circ = 210^\circ$



3. $\sin \theta = -\frac{\sqrt{2}}{2} = -\frac{1}{\sqrt{2}}$ find θ

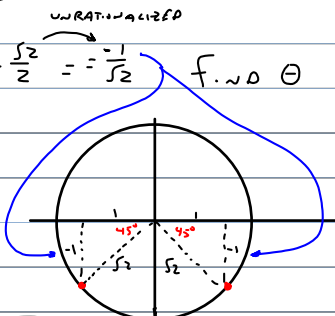
Find the REF $\angle = 45^\circ$

θ in QUAD III

$180^\circ + 45^\circ = 225^\circ$

θ in QUAD IV

$360^\circ - 45^\circ = 315^\circ$



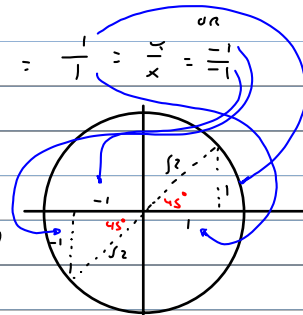
4. $\tan \theta = 1 = \frac{1}{1} = \frac{y}{x} = \frac{1}{1}$

REF \angle 's = 45°

θ in QUAD I = 45°

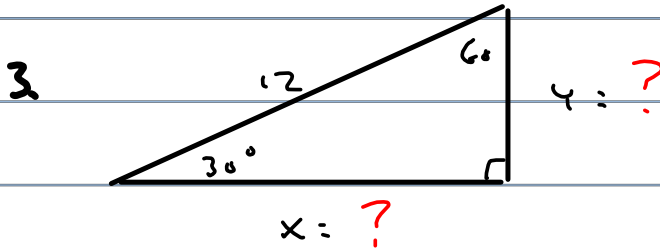
θ in QUAD III

$180^\circ + 45^\circ = 225^\circ$



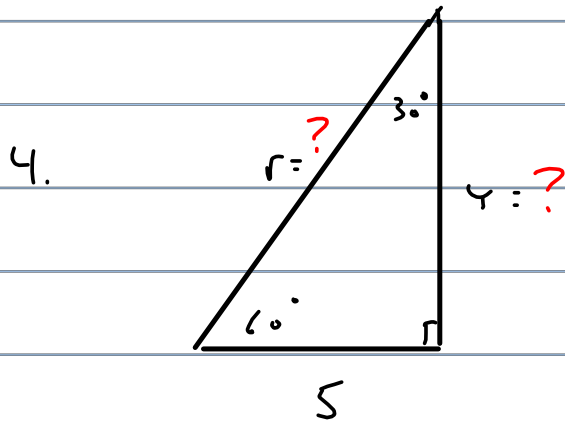
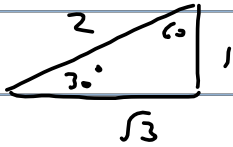
Hw. 4.4 ws # 1-21 odds

DO NOT USE A CALCULATOR!!



$$y = 6$$

$$x = 6\sqrt{3}$$



$$y = 5\sqrt{3}$$

$$r = 10$$

