

Name: _____
Serafino · Precalculus S1Per: 7

Date: _____

2A3**Solving Trig Functions (using Inverses and $\hat{\theta}$)**

Notes / HW

USING REFERENCE ANGLES				
Q	θ'	$0^\circ \leq \theta < 360^\circ$	Sketch $\sin \theta$ $\cos \theta$	What math did you do?
I	20°			
	48°			
	81°			
II	70°			
	55°			
	20°			
III	1°			
	15°			
	40°			
IV	80°			
	50°			
	10°			

1. For the following, find the solution(s) for $0^\circ \leq \theta < 360^\circ$

a. $\sin \theta = 2/9 \in \text{QII}$

d. θ intersects $(11, -3)$

b. $\cos \theta = -7/8 \in \text{QIII}$

e. $\csc \theta = -3$ in QII

c. $\sec \theta = 1/2$ in QIV

f. $\cot \theta = -2.34$ in QII

1. Find the solution(s) for the angles, $0^\circ \leq \theta < 360^\circ$. If

a. Terminal side of θ intersects $(\sqrt{2}, 4)$

d. $\cos \theta = -0.8541$

b. $\tan \theta = -\frac{3}{4}$ and θ lies in QIV

e. $\cot \theta = -1.6003$

c. $\cos \theta = 3.8637$ and $\theta \in$ QIV

f. $\sin \theta = -0.5592$

2. Find the solution(s) for the special angles, $0^\circ \leq \theta < 360^\circ$. NO CALCULATOR!!!

a. $\tan = \sqrt{3}$ in QIII

d. $\sin \theta = -1$

g. $\tan \theta = \text{und}$

b. $\cos \theta = -\sqrt{2}/2$ in QII

e. $\cos \theta = 1$

h. $\sin \theta = -\sqrt{3}/2$

c. $\sin = 1/2$ in QI

f. $\cos \theta = 0$

i. $\tan \theta = \text{und}, \sin \theta < 0$

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USING REFERENCE ANGLES					
Q	θ'	$0^\circ \leq \theta < 360^\circ$	$\sin \theta$	$\cos \theta$	What math did you do?
I	20°	20°	.342	.939	none
	48°	48°	.743	.669	
	81°	81°	.989	.156	
II	70°	110°	.939	-.342	$180 - \hat{\theta}$
	55°	125°	.819	-.574	
	20°	160°	.342	-.939	
III	1°	181°	-.017	-.999	$180 + \hat{\theta}$
	15°	195°	-.259	-.966	
	40°	220°	-.643	-.766	
IV	80°	280°	-.985	.174	$360 - \hat{\theta}$
	50°	310°	-.766	.643	
	10°	350°	-.174	.985	

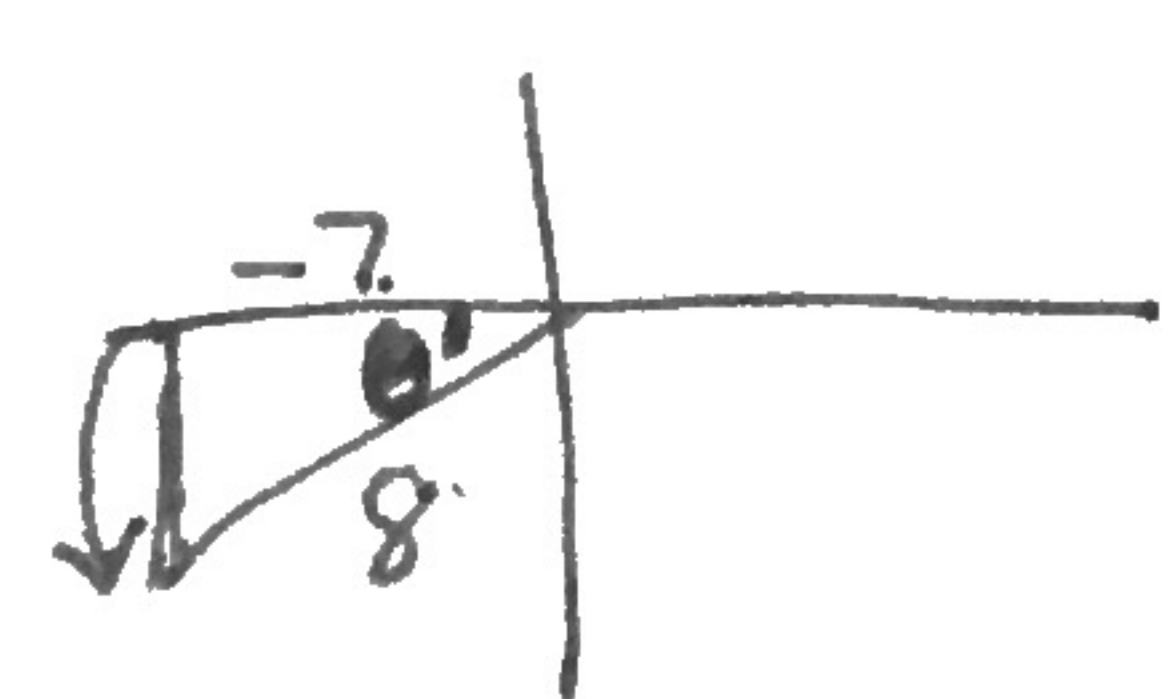
1. For the following, find the solution(s) for $0^\circ \leq \theta < 360^\circ$

a. $\sin \theta = 2/9 \in \text{QII}$ 

$180 - \sin^{-1}\left(\frac{2}{9}\right)$
 12.83° $\theta = 167.1604^\circ$

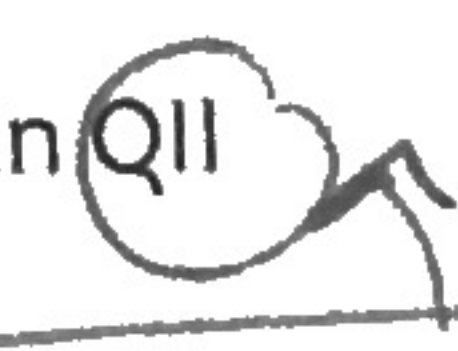
d. θ intersects (11, -3) 

$360 - \tan^{-1}\left(\frac{3}{11}\right)$
 15.255° $\theta = 344.7449^\circ$

b. $\cos \theta = -7/8 \in \text{QIII}$ 

$180 + \cos^{-1}\left(\frac{7}{8}\right)$

$\theta = 208.955^\circ$

e. $\csc \theta = -3 \in \text{QII}$ 

csc is pos in QII

NO solution!

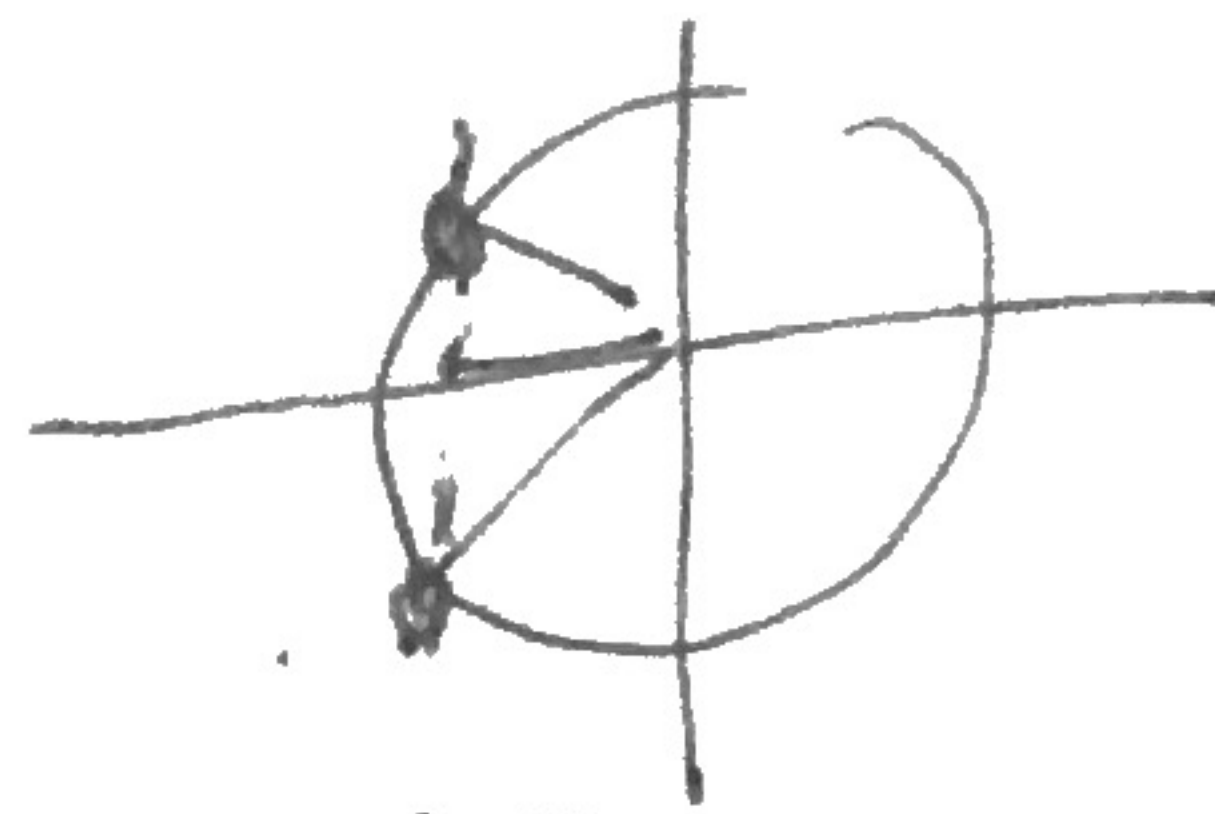
c. $\sec \theta = 1/2 \in \text{QIV}$

$\cos \theta = 2$ not possible

f. $\cot \theta = -2.34 \in \text{QII}$

$180 - \tan^{-1}\left(\frac{1}{2.34}\right)$

$\theta = 156.8605^\circ$



1. Find the solution(s) for the angles, $0^\circ \leq \theta < 360^\circ$. If

a. Terminal side of θ intersects $(\sqrt{2}, 4)$

$$0 + \tan^{-1}\left(\frac{4}{\sqrt{2}}\right)$$

$$\theta = 70.5288^\circ$$



d. $\cos \theta = -0.8541$

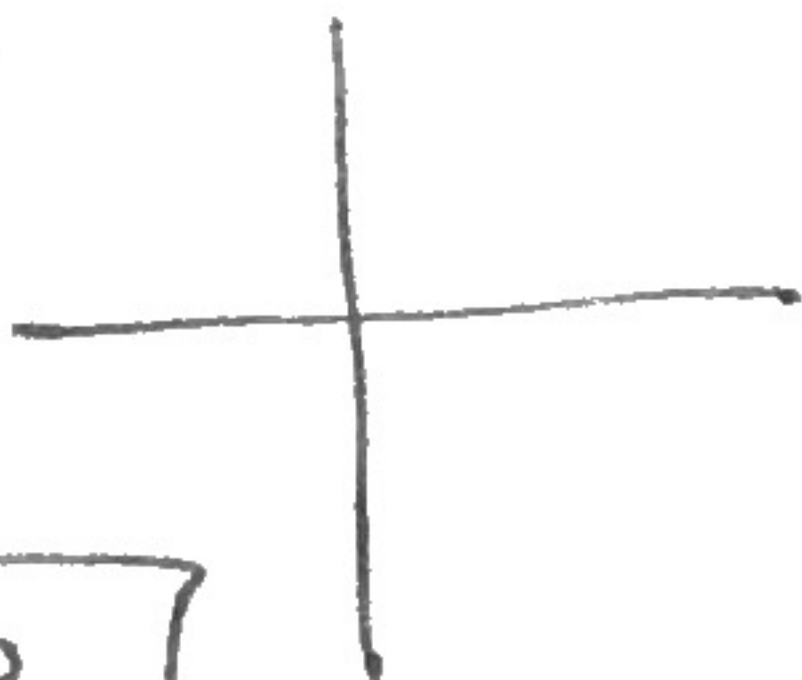
$$\theta = 148.6604^\circ$$

$$211.3396^\circ$$

b. $\tan \theta = -\frac{3}{4}$ and θ lies in QIV

$$360 - \tan^{-1}\left(\frac{3}{4}\right)$$

$$\theta = 323.1301^\circ$$



e. $\cot \theta = -1.6003$

$$\tan \theta = -1/1.6003$$

$$180 \pm \tan^{-1}(1/1.6003)$$

$$\theta = 147.9994^\circ \text{ or } 327.9994^\circ$$



c. $\cos \theta = 3.8637$ and $\theta \in \text{QIV}$

cosine can't be > 1
so no solution

f. $\sin \theta = -0.5592$

$$\theta = 214.0005^\circ$$

$$325.9995^\circ$$

2. Find the solution(s) for the special angles, $0^\circ \leq \theta < 360^\circ$. NO CALCULATOR!!!

a. $\theta' = 60$
 $\tan \theta = \sqrt{3}$ in QIII

$$240^\circ$$



Quad

d. $\sin \theta = -1$

$$270^\circ$$

Quad.

g. $\tan \theta = \text{und}$

$$90^\circ, 270^\circ$$

b. $\theta' = 45^\circ$
 $\cos \theta = -\sqrt{2}/2$ in QII

$$135^\circ$$

Quad

e. $\cos \theta = 1$

$$0^\circ$$

$\theta' = 60^\circ$

h. $\sin \theta = -\sqrt{3}/2$

$$240^\circ, 300^\circ$$

c. $\theta' = 30^\circ$
 $\sin \theta = 1/2$ in QI

$$30^\circ$$

Quad

f. $\cos \theta = 0$

$$90^\circ, 270^\circ$$

i. $\tan \theta = \text{und}, \sin \theta < 0$

$$270^\circ$$