$(\cos\theta, \sin\theta)$

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Date _____
Algebra II

The Unit Circle

Find the exact value of the coordinate on the unit circle for each of the following

	30	45	60
sin	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cos	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tan	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$

1. $\theta = 30°$

$(\cos 30, \sin 30)$

$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

2. $\theta = 60°$ $\quad \theta = \frac{\pi}{3} \cdot \frac{180}{\pi} = 60$

$(\cos 60, \sin 60)$

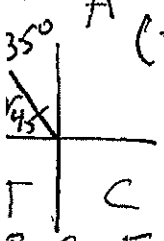
$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

3. $\theta = 45°$

$(\cos 45, \sin 45)$

$\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

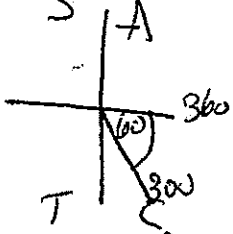
4. $\theta = 135°$ $\quad \theta = \frac{3\pi}{4} \cdot \frac{180}{\pi} = 135°$



$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

Q S F R
II + $\cos 45 = -\frac{\sqrt{2}}{2}$
II + $\sin 45 = \frac{\sqrt{2}}{2}$

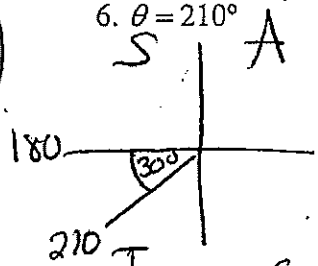
5. $\theta = 300°$



$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

Q S F R
IV + $\cos 60 = \frac{1}{2}$
IV − $\sin 60 = -\frac{\sqrt{3}}{2}$

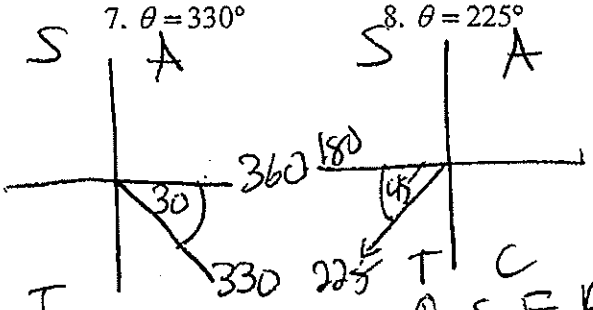
6. $\theta = 210°$ $\quad \theta = \frac{7\pi}{6} \cdot \frac{180}{\pi} = 210°$



$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

Q S F R
III − $\cos 30 = -\frac{\sqrt{3}}{2}$
III − $\sin 30 = -\frac{1}{2}$

7. $\theta = 330°$



Q S F R
IV + $\cos 30$ $\frac{\sqrt{3}}{2}$
IV − $\sin 30$ $-\frac{1}{2}$

$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

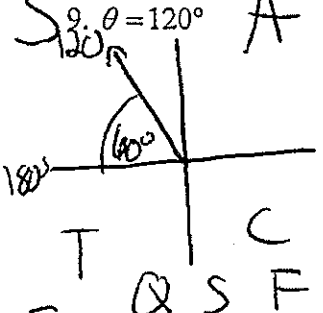
$\theta = \frac{5\pi}{4} \cdot \frac{180}{\pi} = 225$

8. $\theta = 225°$

Q S F R
III − $\cos 45 = -\frac{\sqrt{2}}{2}$
III − $\sin 45 = -\frac{\sqrt{2}}{2}$

$\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

9. $\theta = 120°$



Q S F R
II − $\cos 60 = -\frac{1}{2}$
II + $\sin 60 = \frac{\sqrt{3}}{2}$

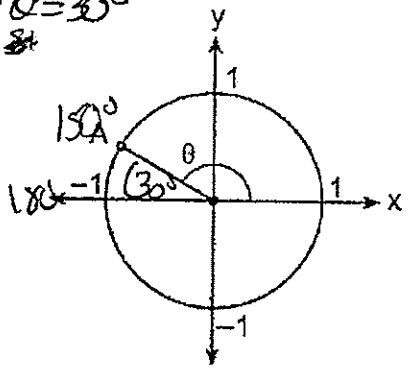
$\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$\cos\theta, \sin\theta$

10. In the diagram of a unit circle below, point A, $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$, represents the point where the terminal side of θ intersects the unit circle. $\theta=30$ $\theta=30$

What is $m\angle\theta$?

1) 30°
2) 120°
3) 135°
4) 150°



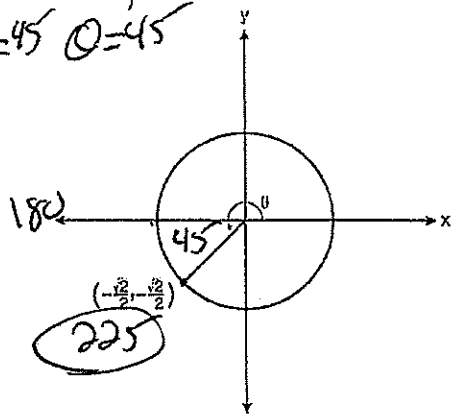
$\cos\theta, \sin\theta$

11. In the diagram below of a unit circle, the ordered pair $\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$ represents the point where the terminal side of θ intersects the unit circle. $\theta=45$ $\theta=45$

What is $m\angle\theta$?

1) ~~45~~ $\frac{\pi}{4}$
2) ~~135~~ $\frac{3\pi}{4}$
3) ~~225~~ $\frac{5\pi}{4}$
4) ~~240~~ $\frac{4\pi}{3}$

$\frac{225\pi}{180} = \frac{5\pi}{4}$



$\cos\theta, \sin\theta$

12. In the diagram of a unit circle below, a point on the unit circle as coordinates $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$.

What is $m\angle\theta$?

1) 300°
2) 315°
3) 240°
4) 330°

$\theta=300$ $\theta=60$