Day 5: Non-Calculator Part of Final (4.2-4.3)

Solutions

4.2 p. 264 Find the value of all six trig functions without using a calculator. Hint: use SOH CAH TOA

1. 60° 2. 150° 3. 315° 4. $4\pi/3$ 5. $-\pi/6$ 6. 90° 7. π

4.3 p. 274 Find each value of Θ in radians ($0 < \Theta < 2\pi$) without using a calculator.

8. $\sin\Theta = 1/2$ 9. $\cos\Theta = -\frac{\sqrt{2}}{2}$ 10. $\tan\Theta = \sqrt{3}$

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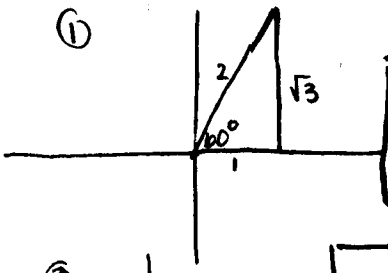
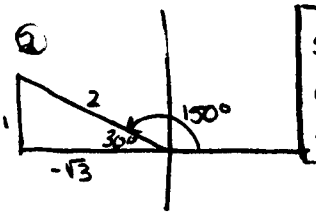
① 

$\sin 60° = \sqrt{3}/2$ $\quad \csc 60° = 2/\sqrt{3} = 2\sqrt{3}/3$

$\cos 60° = 1/2$ $\quad \sec 60° = 2/1 = 2$

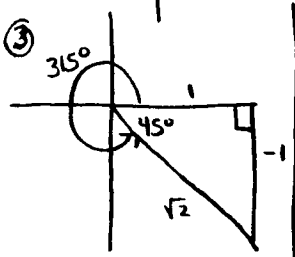
$\tan 60° = \sqrt{3}/1 = \sqrt{3}$ $\quad \cot 60° = 1/\sqrt{3} = \sqrt{3}/3$

② 

$\sin 150° = \frac{1}{2}$ $\quad \csc 150° = 2$

$\cos 150° = -\frac{\sqrt{3}}{2}$ $\quad \sec 150° = -\frac{2\sqrt{3}}{3}$

$\tan 150° = -\sqrt{3}/3$ $\quad \cot 150° = -\sqrt{3}$

③ 

$\sin 315° = -\sqrt{2}/2$

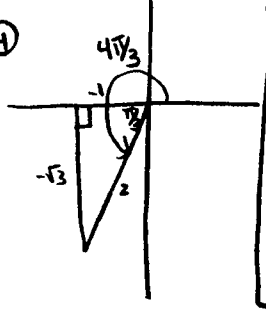
$\cos 315° = \sqrt{2}/2$

$\tan 315° = -1$

$\csc 315° = -\sqrt{2}$

$\sec 315° = \sqrt{2}$

$\cot 315° = -1$

④ 

$\sin \frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$

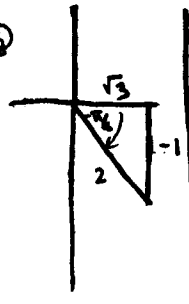
$\cos 4\pi/3 = -\frac{1}{2}$

$\tan 4\pi/3 = \sqrt{3}$

$\csc 4\pi/3 = -\frac{2\sqrt{3}}{3}$

$\sec 4\pi/3 = -2$

$\cot 4\pi/3 = \frac{\sqrt{3}}{3}$

⑤ 

$\sin -\frac{\pi}{6} = -1/2$

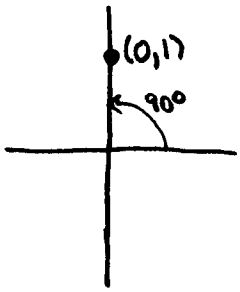
$\cos -\frac{\pi}{6} = \sqrt{3}/2$

$\tan -\pi/6 = -\frac{\sqrt{3}}{3}$

$\csc -\pi/6 = -2$

$\sec -\frac{\pi}{6} = \frac{2\sqrt{3}}{3}$

$\cot -\pi/6 = -\sqrt{3}$

⑥ 

Use unit circle and $\tan = \sin/\cos$

Reminder: points on unit circle = $(\cos\theta, \sin\theta)$

$\sin 90° = 1$

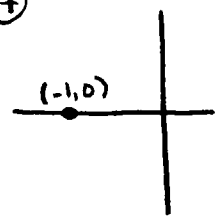
$\cos 90° = 0$

$\tan 90° = 1/0 =$ und.

$\csc 90° = 1$

$\sec 90° =$ und

$\cot 90° = 0$

⑦ 

$\sin\pi = 0$

$\cos\pi = -1$

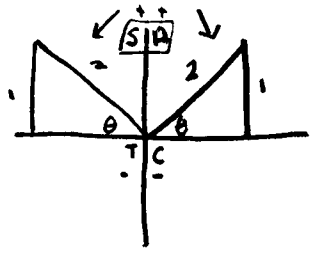
$\tan\pi = 0$

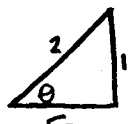
$\csc\pi =$ und

$\sec\pi = -1$

$\cot\pi =$ und

⑧ $\sin\theta = 1/2 = O/H$

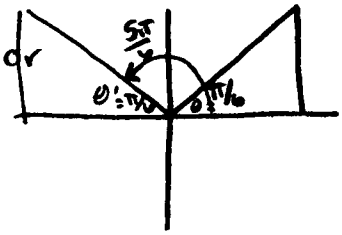




↑ recognize or use pythagorean thm

$\theta = \pi/6$

$\theta' = \pi/6$



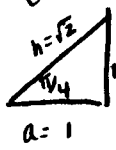
$\theta = \frac{\pi}{6}$ or $\pi - \frac{\pi}{6} = \frac{5\pi}{6}$

$\theta = \{\pi/6, 5\pi/6\}$

⑨ $\cos\theta = -\sqrt{2}/2 = -\frac{1}{\sqrt{2}} = \frac{a}{h}$

II	A
-S	
III	IV
-T	C

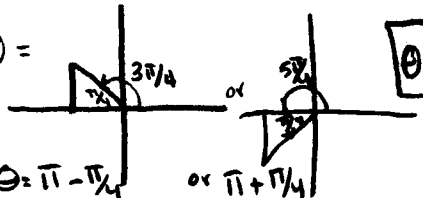
to find θ'



← pyth. thm or memorize

recognize 45-45-90

$\theta =$



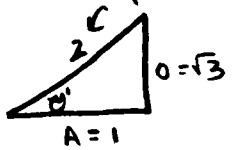
$\theta = \{3\pi/4, 5\pi/4\}$

$\theta = \pi - \pi/4$ or $\pi + \pi/4$

⑩ $\tan\theta = \sqrt{3} = \frac{\sqrt{3}}{1} = \frac{O}{A}$

II	I
-S	A
III	IV
+T	-C

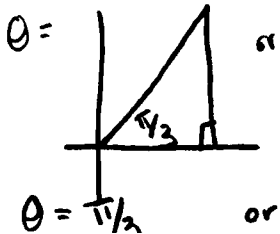
$\theta' =$



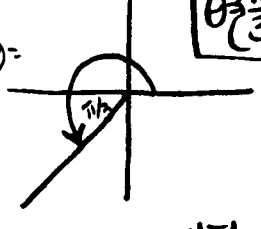
pythg. thm or memorize

recognize 30-60-90 → $\theta' = \pi/3$

$\theta =$



$\theta = \pi/3$ or $\theta =$



$\theta = \{\frac{\pi}{3}$ or $\frac{4\pi}{3}\}$

$\theta = \pi + \pi/3 = 4\pi/3$