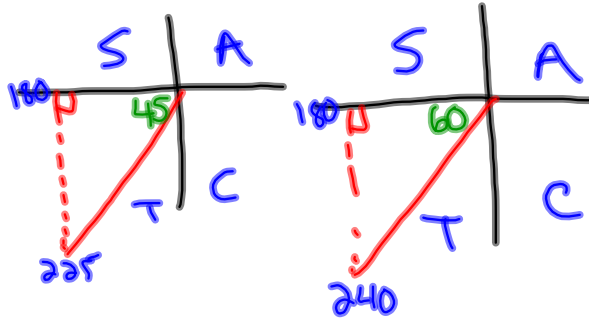


Warm-Up

$$\frac{\cos 225^\circ}{\sin 240^\circ + \cos 60^\circ}$$



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

$$\frac{\frac{-\sqrt{2}}{2}}{\frac{1-\sqrt{3}}{2}}$$

$$\frac{-\sqrt{2}}{2} \times \frac{2}{1-\sqrt{3}}$$

$$\frac{-\sqrt{2}}{(1-\sqrt{3})(1+\sqrt{3})}$$

$$\frac{-\sqrt{2} - \sqrt{6}}{1-3}$$

$$\frac{-\sqrt{2} - \sqrt{6}}{-2} \quad \text{or} \quad \boxed{\frac{\sqrt{2} + \sqrt{6}}{2}}$$

Questions from homework

⑩ $\frac{2\cos 180^\circ + \sin 45^\circ}{\cos 60^\circ}$ ⑪ $\frac{\sin 30^\circ - \cos 45^\circ}{\cos 60^\circ - \sin 45^\circ}$

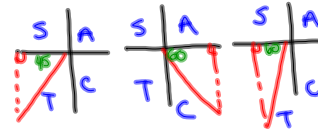
$$\frac{2(-1) + \left(\frac{\sqrt{2}}{2}\right)}{\left(\frac{1}{2}\right)}$$

$$\frac{-2 + \frac{\sqrt{2}}{2}}{\frac{1}{2}}$$

$$\frac{-4 + \sqrt{2}}{1} \times \frac{1}{1}$$

$$-4 + \sqrt{2} \text{ or } \boxed{\sqrt{2} - 4}$$

⑫ $\frac{3\sin 225^\circ \cos 300^\circ}{\sin 240^\circ}$



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

$$\frac{-3\sqrt{2}}{4} \times \frac{2}{-\sqrt{3}}$$

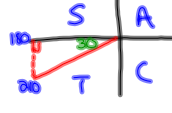
$$\frac{-6\sqrt{2}}{-4\sqrt{3}}$$

$$\frac{3\sqrt{2} \cdot \sqrt{3}}{2\sqrt{3} \cdot \sqrt{3}}$$

$$\frac{3\sqrt{6}}{6}$$

$$\boxed{\frac{\sqrt{6}}{2}}$$

⑬ $\frac{\sin 90^\circ + \cos^2 210^\circ}{\cos 30^\circ}$



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

$$\frac{1 + \frac{3}{4}}{\frac{\sqrt{3}}{2}}$$

$$\frac{4 + 3}{2\sqrt{3}}$$

$$\frac{7 \cdot \sqrt{3}}{2\sqrt{3} \cdot \sqrt{3}}$$

$$\frac{7\sqrt{3}}{2(3)}$$

$$\boxed{\frac{7\sqrt{3}}{6}}$$

Working Backwards

S	A
T	C

$180 - \text{ref.}$	ref.
$180 + \text{ref.}$	$360 - \text{ref.}$

Write all angles between 0° and 360° that will solve the following

1. $\cos \theta = \frac{\sqrt{3}}{2}$

$\text{ref} = 30^\circ$

cosine is positive in Q1 + Q4

<u>Q1</u>	<u>Q4</u>
$\theta = \text{ref}$	$\theta = 360 - \text{ref}$
$\theta = 30^\circ$	$\theta = 360 - 30$
	$\theta = 330^\circ$

1. Find ref. angle by looking at charts (**triangles**)
2. If trig ratio is positive then ref. angle = θ
3. Find where else that trig ratio is (+) or (-)
4. Use **CAST** and appropriate equation.

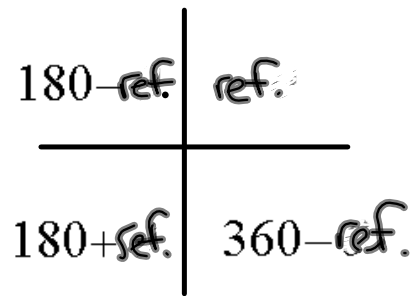
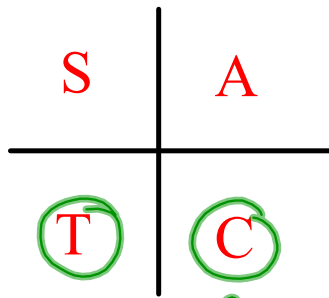
Example:

2. $\tan \theta = 1$

ref = 45°

tan is positive in Q1 + Q3

<u>Q1</u>		<u>Q3</u>
$\theta = 45^\circ$		$\theta = 180^\circ + 45^\circ = 225^\circ$
$45^\circ + 360k, k \in \mathbb{Z}$		$225^\circ + 360k, k \in \mathbb{Z}$



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

ref = 30°

sine is negative in Q3 + Q4

<u>Q3</u>	<u>Q4</u>
$\theta = 180 + 30^\circ$	$\theta = 360 - 30$
$\theta = 210^\circ$	$\theta = 330^\circ$
$210^\circ + 360k, k \in \mathbb{I}$	$330 + 360k, k \in \mathbb{I}$

4. $\cos \theta = 1$ (Unit Circle)

$\theta = 0^\circ, 360^\circ$

$0 + 360^\circ k, k \in \mathbb{I}$

S	A
T	C

$180 - \text{ref.}$	ref.
$180 + \text{ref.}$	$360 - \text{ref.}$

5. $\sin \theta = -1$ (Unit Circle)

$$\theta = 270^\circ$$

$$270 + 360k, k \in \mathbb{I}$$

6. $\sin \theta = -\frac{\sqrt{2}}{2}$

$\text{ref} = 45^\circ$

\sin is negative in Q3+Q4

Q3

Q4

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

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

$$225^\circ + 360k, k \in \mathbb{I}$$

$$315^\circ + 360k, k \in \mathbb{I}$$

Homework