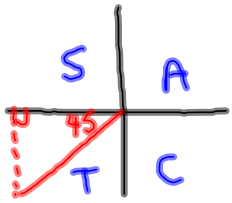
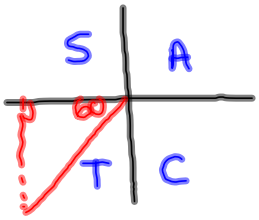
Warm-Up

$$\frac{\cos 225°}{\sin 240° + \cos 60°}$$





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

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

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

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

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

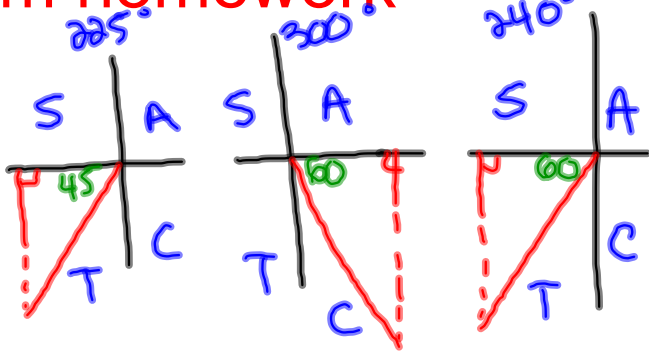
$$\frac{-\sqrt{2}-\sqrt{6}}{-2}$$

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

Questions from homework

$-120 + 360 = 240$

(12) $\dfrac{3\sin 225^\circ \cos 300^\circ}{\sin 240^\circ}$



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

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

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

$$\frac{3\sqrt{6}}{2(3)}$$

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

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

Working Backwards

θ = ref

S	A
T	C

$180-\theta$	θ
$180+\theta$	$360-\theta$

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

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

ref = 30°

Quad 1: θ = 30°

Quad 4: θ = 360 − ref; θ = 360° − 30°; θ = 330°

$\cos\theta = \ominus\frac{\sqrt{3}}{2}$

ref = 30°

cosine is negative

Quad 2: θ = 180 − ref; θ = 180 − 30; θ = 150°

Quad 3: θ = 180 + ref; θ = 180 + 30; θ = 210°

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°

Quad 1: $\theta = 45°$; $45° + 360k$, k∈I

Quad 3: $\theta = 180 + ref$; $\theta = 180° + 45°$; $\theta = 225°$; $225° + 360k$, k∈I

S	A
T	C

$180-\theta$	θ
$180+\theta$	$360-\theta$

3. $\sin\theta = -\frac{1}{2}$ ref = 30°

Quad 3: $\theta = 180° + 30°$, $\theta = 210°$, $210° + 360k$, kEI

Quad 4: $\theta = 360° - 30°$, $\theta = 330°$, $330° + 360k$, kEI

4. $\cos\theta = 1$ ref = 0°, 360° (On the Unit Circle)

$\theta = 0 + 360k$, kEI

S	A
T	C

$180-\theta$	θ
$180+\theta$	$360-\theta$

5. $\sin\theta = -1$ ref = 270°

$\theta = 270° + 360k$, KEI

6. $\sin\theta = -\frac{\sqrt{2}}{2}$ or $-\frac{1}{\sqrt{2}}$ ref = 45°

Quad 3	Quad 4
$\theta = 180° + 45°$	$\theta = 360° - 45°$
$\theta = 225°$	$\theta = 315°$
$225° + 360k$, KEI	$315° + 360k$, KEI

Homework