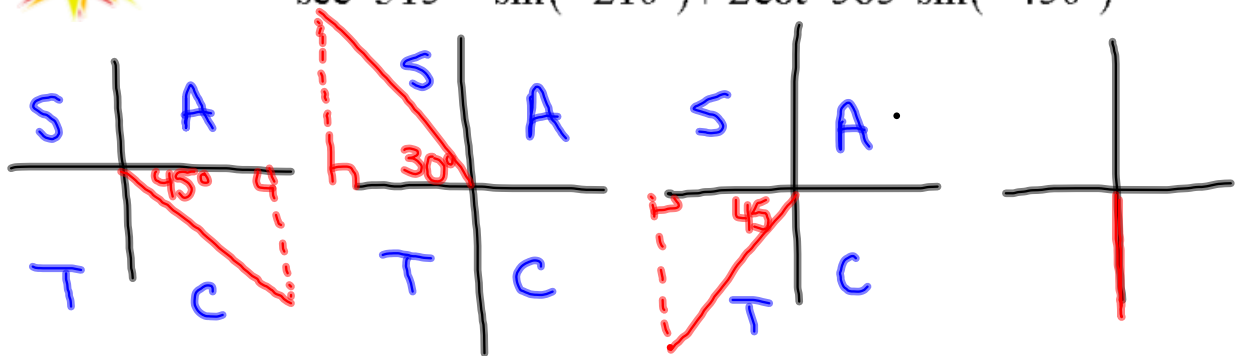


And now for the grand finale...if you can handle this one, you should give yourself a nice pat on the back.

Without a calculator determine the value of...

$$\sec^2 315^\circ - \sin(-210^\circ) + 2 \cot^2 585^\circ \sin(-450^\circ)$$



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

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

$$\boxed{-\frac{1}{2}}$$



Without a calculator determine the value of...



$$\frac{2 \cos 180 + \sin 135}{\cos^2(-330)}$$

P.A. 30°

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

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

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

$$\frac{-4 + \sqrt{2}}{\cancel{2}^1} \cdot \frac{4^2}{3}$$

$$\boxed{\frac{-8 + 2\sqrt{2}}{3}}$$

Solving Trigonometric Equations

S	A
T	C

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

1. Find θ by looking at charts (**triangles**)
2. If it is positive $\theta = \text{angle}$
3. Find where else that trig ratio is (+) or (-)
4. Use **CAST** and appropriate equation.

S		A
T		C

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

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

$$\cos \theta = \frac{\sqrt{3}}{2} \quad \text{ref} = 30^\circ$$

$$\theta = \underline{30^\circ}, \quad 360^\circ - 30^\circ = \underline{330^\circ}$$

Solving Trigonometric Equations

$$\cos^2 \theta - \frac{1}{2} \cos \theta = 0, \quad -360^\circ \leq \theta \leq 720^\circ$$

$$\cos \theta \left(\cos \theta - \frac{1}{2} \right) = 0$$

$$\cos \theta = 0 \quad | \quad \cos \theta - \frac{1}{2} = 0$$

$$\theta = 90^\circ, 270^\circ$$

$$\theta = -270^\circ, -90^\circ$$

$$\theta = 450^\circ, 630^\circ$$

$$\cos \theta = \frac{1}{2} \quad \text{ref} = 60^\circ$$

$$\theta = 60^\circ, 300^\circ$$

$$\theta = -300^\circ, -60^\circ$$

$$\theta = 420^\circ, 660^\circ$$

Solving Trigonometric Equations

$$2\sin^2\theta + \sin\theta - 1 = 0 \quad 0 \leq \theta \leq 360$$

$$(2\sin^2\theta + 2\sin\theta)(-\sin\theta - 1) = 0$$

$$2\sin\theta(\sin\theta + 1) - 1(\sin\theta + 1) = 0$$

$$(2\sin\theta - 1)(\sin\theta + 1) = 0$$

$$2\sin\theta - 1 = 0$$

$$2\sin\theta = 1$$

$$\text{ref. } 30^\circ \quad \sin\theta = \frac{1}{2}$$

$$\theta = 30^\circ, 150^\circ$$

$$\sin\theta + 1 = 0$$

$$\sin\theta = -1$$

$$\theta = 270^\circ$$

Homework

S	A
T	C

⑤ a) $\sin \theta = -\frac{\sqrt{3}}{2}$ ref $\theta = 60^\circ$

$$\begin{array}{l|l} \text{Q3} & \text{Q4} \\ \theta = 180^\circ + 60^\circ & 360^\circ - 60^\circ \\ = 240^\circ & 300^\circ \end{array}$$

$$240^\circ + 360^\circ k, k \in \mathbb{I} \quad | \quad 300^\circ + 360^\circ k, k \in \mathbb{I}$$