

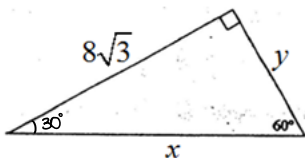
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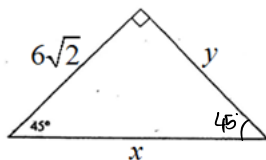
Pre-Calculus 11: Ch2 Trigonometry HW Lesson 3 Special Triangles and Angles in Standard Position

1. Find the values of the missing sides "x" and "y"

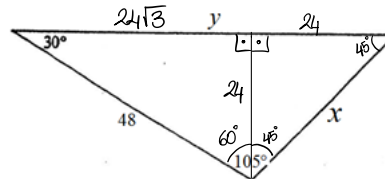
a) $x = 16$ $y = 8$



b) $x = 12$ $y = 6\sqrt{2}$

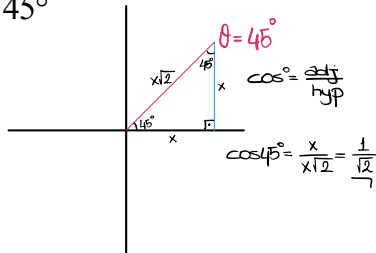


c) $x = 24\sqrt{3}$ $y = 24 + 24\sqrt{3}$

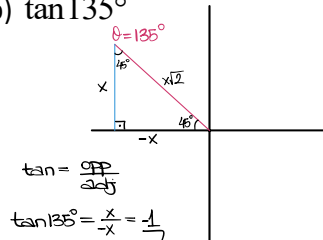


2. Draw the angle in standard position and then determine the exact value using Special Triangles. No calculators:

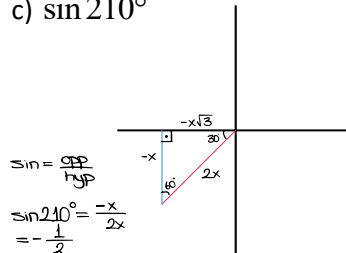
a) $\cos 45^\circ$



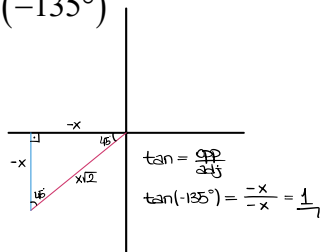
b) $\tan 135^\circ$



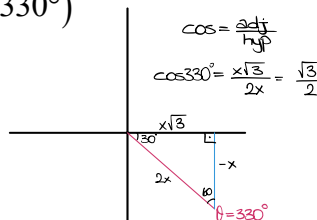
c) $\sin 210^\circ$



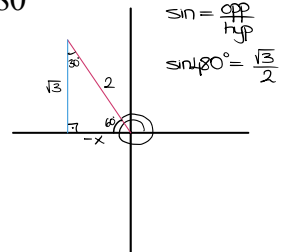
d) $\tan(-135^\circ)$



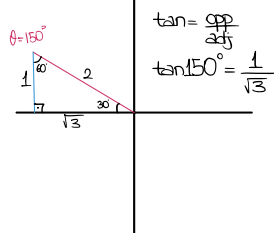
e) $\cos(330^\circ)$



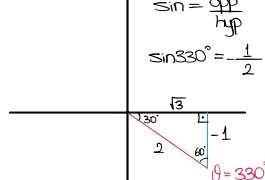
f) $\sin 480^\circ$



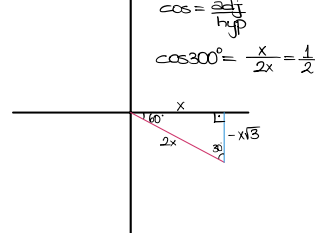
g) $\tan 150^\circ$



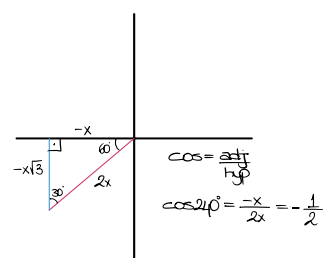
h) $\sin 330^\circ$



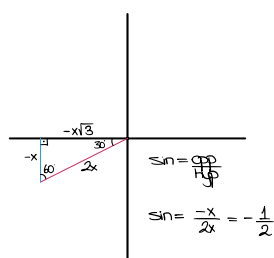
i) $\cos 300^\circ$



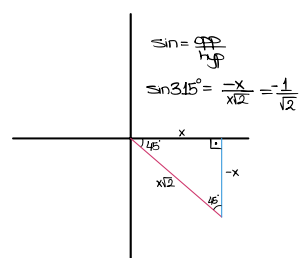
j) $\cos 240^\circ$



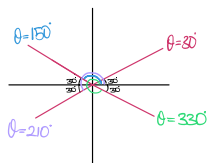
k) $\sin 210^\circ$



l) $\sin 315^\circ$



3. Which angles between 0° and 360° have a reference angle of 30° ?



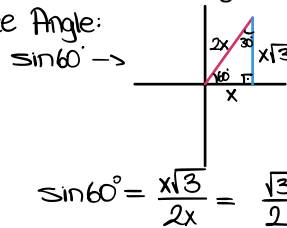
$30^\circ, 150^\circ, 210^\circ, 330^\circ$

4. The angles $60^\circ, 120^\circ, 240^\circ$ and 300° all have the same reference angles. What generalizations can you find with $\sin 60^\circ, \sin 120^\circ, \sin 240^\circ$ and $\sin 300^\circ$? Reference Angle:

$\sin$;

Quadrant 1 $\rightarrow (+)$ Quadrant 3 $\rightarrow (-)$

Quadrant 2 $\rightarrow (+)$ Quadrant 4 $\rightarrow (-)$



$$\sin 60^\circ = +\frac{\sqrt{3}}{2}$$

$$\sin 120^\circ = +\frac{\sqrt{3}}{2}$$

$$\sin 240^\circ = -\frac{\sqrt{3}}{2}$$

$$\sin 300^\circ = -\frac{\sqrt{3}}{2}$$

* Angles with same reference angle have the same sine value but it could be either positive or negative depending on which quadrant it's in.

5. If $\cos 77^\circ$ is equal to 0.224951, what is the value of $\sin 13^\circ$?

$$\sin 13^\circ = 0.224951$$

because $77 + 13 = 90$

6. The angles $55^\circ, 125^\circ, 235^\circ$, and 305° all have the same reference angles. What generalizations can you find with $\cos 55^\circ, \cos 125^\circ, \cos 235^\circ$, and $\cos 305^\circ$?

$\cos$;

Quadrant 1 $\rightarrow (+)$ Quadrant 3 $\rightarrow (-)$

Quadrant 2 $\rightarrow (-)$ Quadrant 4 $\rightarrow (+)$

$$\cos 55^\circ = \cos 305^\circ$$

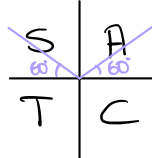
$$\cos 125^\circ = \cos 235^\circ$$

* Because they have the same reference angle their cos values are the same but it can be positive or negative depending on which quadrant they are in

7. Given that $0^\circ \leq \theta \leq 360^\circ$, solve for θ : $\sin \theta = \frac{\sqrt{3}}{2}$

$$\theta = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

$$\theta = 60^\circ$$



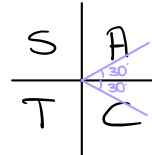
Quadrant 1: 60°

Quadrant 2: 120°

8. Given that $0^\circ \leq \theta \leq 360^\circ$, solve for θ : $\cos \theta = -\frac{\sqrt{3}}{2}$

$$\theta = \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$$

$$\theta = 30^\circ$$



Quadrant 1: 30°

Quadrant 4: 330°

9. Given that $0^\circ \leq \theta \leq 360^\circ$, solve for θ : $\tan \theta = -\frac{1}{\sqrt{2}}$

$$\theta = \tan^{-1}\left(-\frac{1}{\sqrt{2}}\right)$$

$$\theta = 35.264^\circ$$



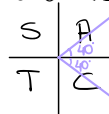
Quadrant 2: 144.736°

Quadrant 4: 324.736°

10. If $\sin 50^\circ = \cos B$, and $0^\circ < B < 360^\circ$, then what are all the possible values of B ?

$$50^\circ + B = 90^\circ$$

$$B = 40^\circ$$



Quadrant 1: 40°

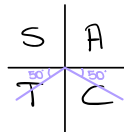
Quadrant 4: 320°

11. If $\cos 220^\circ = \sin A$, and $0^\circ < A < 360^\circ$, then what are all the possible values of A ?

$$\cos 220^\circ = -\cos 40^\circ$$

$$-\cos 40^\circ = -\sin 50^\circ$$

Reference angle: 50°



Quadrant 3: 230°

Quadrant 4: 310°