

Day 1: Right Triangles

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$$\sin(A) = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos(A) = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan(A) = \frac{\text{opposite}}{\text{adjacent}}$$

$$a^2 + b^2 = c^2$$

What mnemonic do you use?

S O C H T A

pythagorean theorem

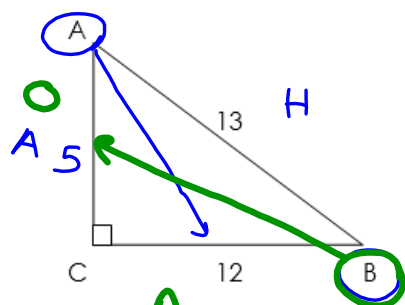
3-4-5

5-12-13

8-15-17

7-24-25

9-40-41



$$\sin(A) = \frac{12}{13}$$

$$\cos(A) = \frac{5}{13}$$

$$\tan(A) = \frac{12}{5}$$

$$\sin(B) = \frac{5}{13}$$

$$\cos(B) = \frac{12}{13}$$

$$\tan(B) = \frac{5}{12}$$

$$x^2 + 12^2 = 13^2$$

$$x^2 + 144 = 169$$

$$x^2 = 25$$

$$x = 5$$

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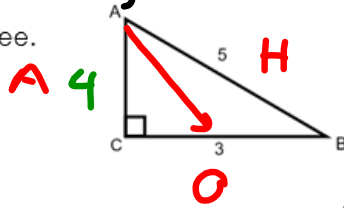
Degree Mode

1. Find $\sin(A)$, $\cos(A)$, $\tan(A)$ and $m\angle A$ to nearest degree.

$$\sin(A) : \frac{3}{5}$$

$$\cos(A) : \frac{4}{5}$$

$$\tan(A) : \frac{3}{4}$$



$$\sin^{-1}\left(\frac{3}{5}\right) = 37^\circ$$

$$\cos^{-1}\left(\frac{4}{5}\right) = 37^\circ$$

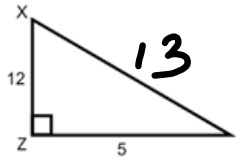
$$\tan^{-1}\left(\frac{3}{4}\right) = 37^\circ$$

2. Find $\cos(X)$, $\sin(X)$, $\tan(Y)$ and $m\angle X$ to nearest degree.

$$\sin(x) : \frac{5}{13}$$

$$\cos(x) : \frac{12}{13}$$

$$\tan(y) : \frac{12}{5}$$



$$\sin^{-1}\left(\frac{5}{13}\right) = 23^\circ$$

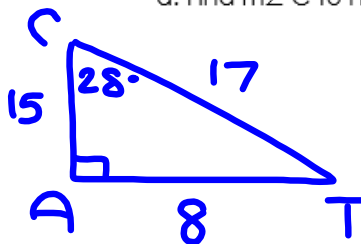
$$\cos^{-1}\left(\frac{12}{13}\right) = 23^\circ$$

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3. Given $\triangle CAT$ with hypotenuse CT . The side opposite $\angle C$ is 8 units long and the hypotenuse is 17 units long.

a. Find $m\angle C$ to nearest degree

b. Use $m\angle C$ to find side CA



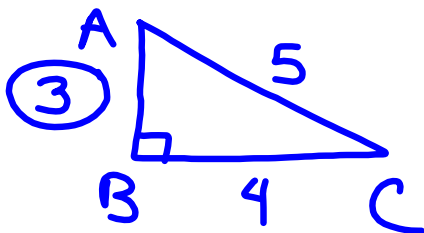
$$\sin^{-1}\left(\frac{8}{17}\right) = 28^\circ$$

$$\tan(28^\circ) = \frac{8}{x}$$

$$\cos(28^\circ) = \frac{x}{17}$$

$$x = 17 \cos 28^\circ$$

4. Sketch triangle ABC, where angle B is the right angle and $\sin(A) = \frac{4}{5}$. Then find $\cos(A)$ and $\tan(A)$.



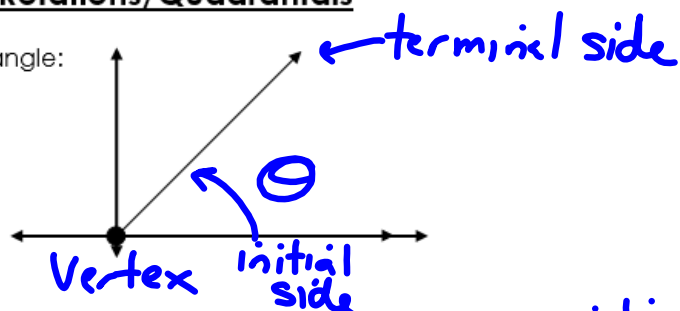
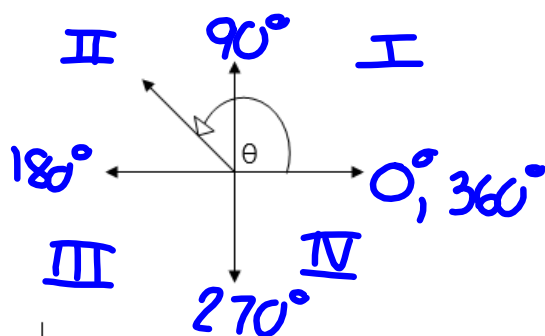
$$\cos(A) : \frac{3}{5}$$

$$\tan(A) : \frac{4}{3}$$

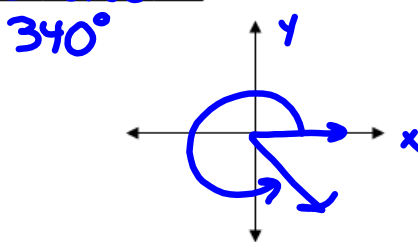
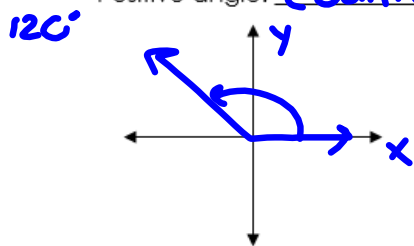
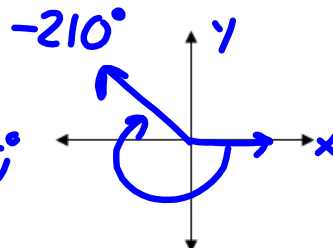
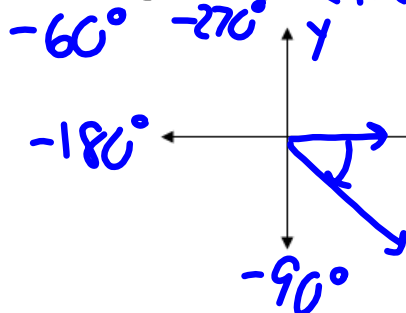
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Angle of Rotations/Quadrants

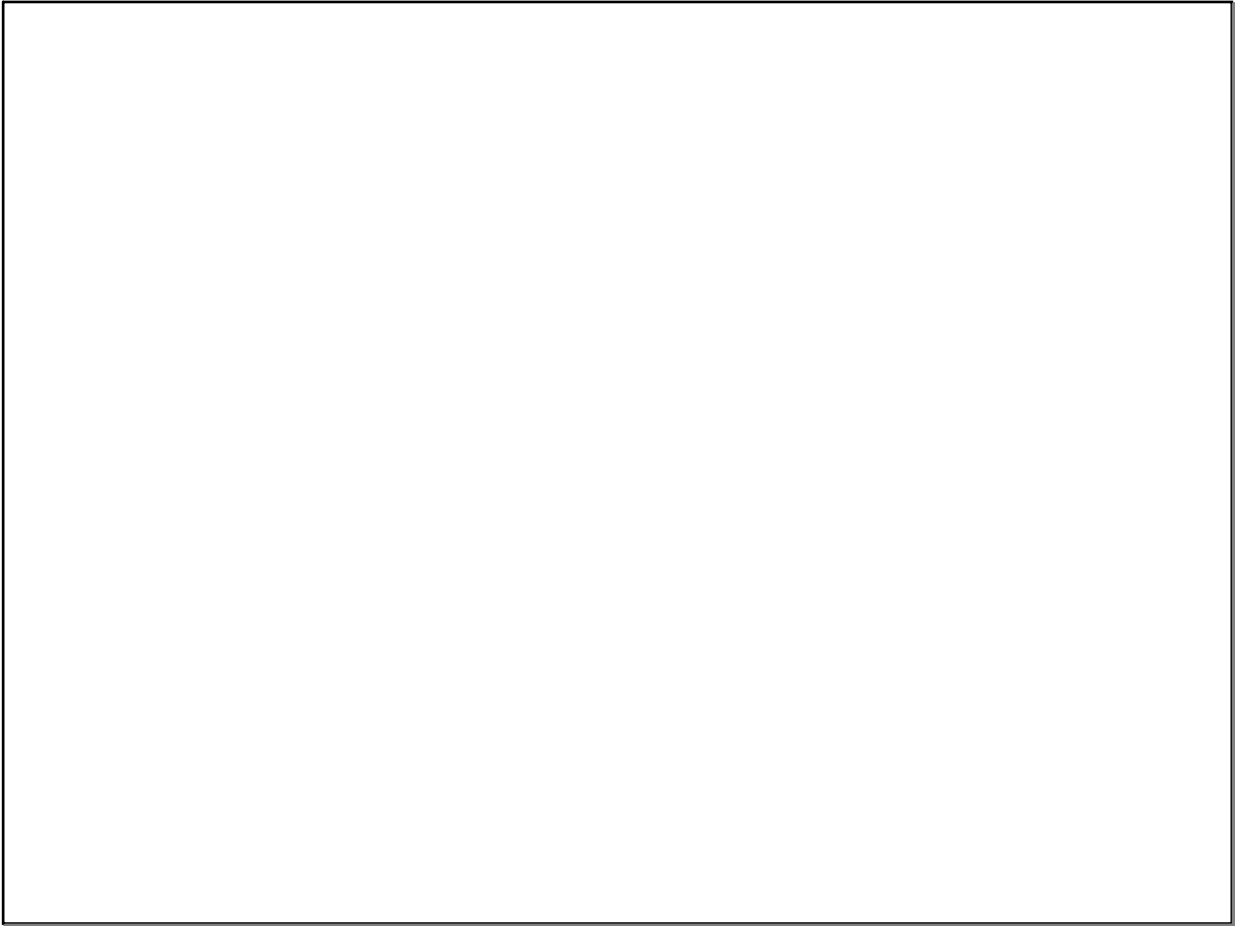
Parts of an angle:

Standard Position: The initial side of the angle is on the positive x-axis θ = Greek letter "theta" (a variable commonly used for angles)Measures of $\angle \theta$ in:Quad I $0^\circ < \theta < 90^\circ$ Quad II $90^\circ < \theta < 180^\circ$ Quad III $180^\circ < \theta < 270^\circ$ Quad IV $270^\circ < \theta < 360^\circ$

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Degree MeasurePositive angle: counter-clockwise directionNegative angle: clockwise direction

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Dec 14-7:18 AM