

# Unit 1 Trig Review

Tuesday, May 30, 2023 1:58 PM

# Unit 1 – Final Exam Review Trigonometry

\*\*YOUR CALCULATOR NEEDS TO BE IN DEGREE MODE\*\*

## Trigonometric Ratios

Find sides

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{O}{H}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{A}{H}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{O}{A}$$

$$\theta = \sin^{-1}\left(\frac{O}{H}\right)$$

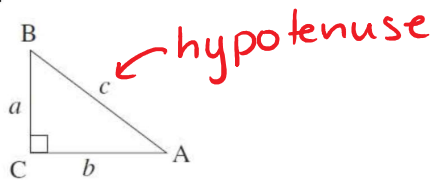
$$\theta = \cos^{-1}\left(\frac{A}{H}\right)$$

$$\theta = \tan^{-1}\left(\frac{O}{A}\right)$$

Find angles

## Pythagorean Theorem

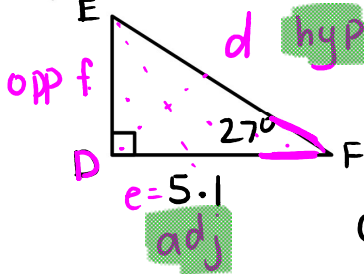
$$a^2 + b^2 = c^2$$



### A. Determine the length of the side

**Example:** Determine the length of the side to the nearest tenth.

a) side  $d$



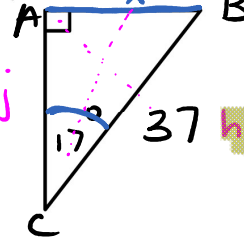
$$\cos \theta = \frac{A}{H}$$

$$d \cos 27 = \frac{5.1}{d}$$

$$\frac{d \cos 27}{\cos 27} = \frac{5.1}{\cos 27}$$

$$d = \frac{5.1}{\cos 27} = \frac{5.1}{.891} = 5.7$$

b) side  $AB = x$



$$\sin \theta = \frac{O}{H}$$

$$37 \cdot \sin 17^\circ = \frac{x}{37}$$

$$37(\sin 17) = x$$

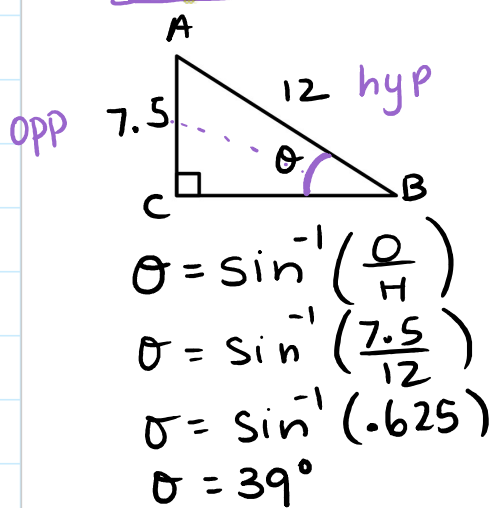
$$37(.292) = x$$

$$x = 10.8$$

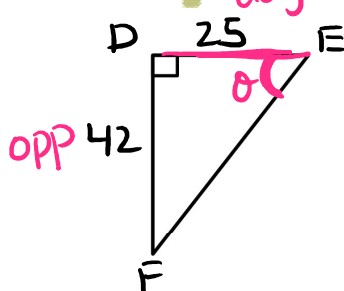
**B. Determine the measure of the angle**

**Example:** Determine the measure of each angle indicated to the nearest degree.

a)  $\angle ABC$



b)  $\angle DEF$



$\theta = \tan^{-1}\left(\frac{O}{A}\right)$   
 $\theta = \tan^{-1}\left(\frac{42}{25}\right)$   
 $\theta = \tan^{-1}(1.68)$   
 $\theta = 59^\circ$

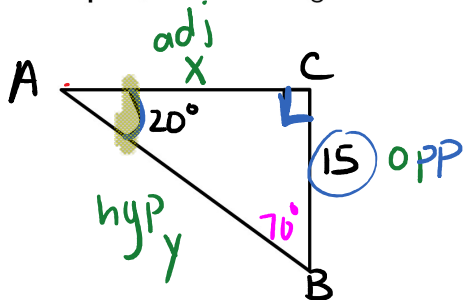
**C. Solve the triangle**

- Determine the length of all sides
- Determine the measure of all angles

3 sides  $\Rightarrow$  Find 2 sides

3 angles  $\Rightarrow$  Find 1 angle

**Example:** Solve the triangle.



Sum of angles  $\Delta = 180^\circ$

$180^\circ = \angle A + \angle B + \angle C$   
 $180^\circ = 20^\circ + \angle B + 90^\circ$   
 $180^\circ = \angle B + 110^\circ$   
 $-110^\circ \quad -110^\circ$   
 $70^\circ = \angle B$

$\angle B = 70^\circ$

$AC = 41.2$

$AB = 43.6$

Find x

$\tan \theta = \frac{O}{A}$

$\times \tan 20^\circ = \frac{15}{x}$

$\frac{x \tan 20^\circ}{\tan 20^\circ} = \frac{15}{\tan 20^\circ}$

$x = \frac{15}{.364} = 41.2$

Find y

$\sin \theta = \frac{O}{H}$

$\times y \sin 20^\circ = \frac{15}{y}$

$\frac{y \sin 20^\circ}{\sin 20^\circ} = \frac{15}{\sin 20^\circ}$

$y = \frac{15}{.342} = 43.6$