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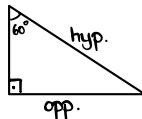
Pre Calculus 11 Ch2 Trig. Lesson 1: Review on Basic Trigonometry:

1. When I use regular trigonometric functions like sine, cosine, and tangent, does it only work for right triangles? Or can I use it for all different types of triangles?

It only works for right triangles

2. When I sine an angle like 60° , it gives me a value like 0.866025403. What does this number represent?

$$\sin 60^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$



The ratio of opposite side and hypotenuse side.

3. There are 2 similar right triangles where one is three times bigger than the other. They are both $45^\circ - 45^\circ - 90^\circ$ triangles. If I cosine the 45° in the smaller triangle, will it give me the same value when I cosine the 45° of the bigger triangle? Why or why not?

Yes, it will give the same number. Because cosine is a ratio, and similar triangles have equal corresponding side ratios

4. When I cosine or sine any angle in a right triangle (except the 90°) will I ever get a value greater than

1? Why or why not?

No because;

$$\sin \alpha = \frac{\text{opp}}{\text{hyp}} \quad \cos \alpha = \frac{\text{adj}}{\text{hyp}}$$

Hypotenuse is always bigger than opposite and adjacent so when opposite and adjacent is divided by a bigger number than themselves, it will be less than 1.

5. When I use tangent on any angle in a right triangle (except the 90°) will I ever get a value greater than 1? Why or why not?

Yes. $\tan \alpha = \frac{\text{opp}}{\text{adj}}$

If the opposite side is greater than adjacent the tangent will be greater than 1.

6. What does the inverse trigonometric function do? Ie: \sin^{-1} , \cos^{-1} , or \tan^{-1} . What is the purpose of these inverse functions?

It returns to the angle whose trig ratio equals the given number
e.g. $\sin^{-1}(0.5) = 30^\circ$

7. What does SOHCAHTOA stand for?

<u>SOH</u>	<u>CAH</u>	<u>TOA</u>
$\sin \alpha = \frac{\text{opp}}{\text{hyp}}$	$\cos \alpha = \frac{\text{adj}}{\text{hyp}}$	$\tan \alpha = \frac{\text{opp}}{\text{adj}}$

8. When I take sine 45 and divide it by cosine 45, does it equal to tangent 45? Why is it equal? Does sine an angle divided by cosine an angle always to tangent the angle? Why or why not?

$$\frac{\sin 45^\circ}{\cos 45^\circ} = \tan 45^\circ ?$$

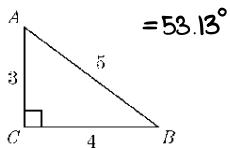
Yes $\frac{\sin \alpha}{\cos \alpha}$ is always equal to $\tan \alpha$

It comes from:

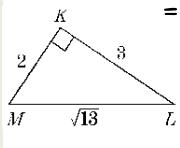
$$\frac{\sin \alpha}{\cos \alpha} = \frac{\frac{\text{opp}}{\text{hyp}}}{\frac{\text{adj}}{\text{hyp}}} = \frac{\text{opp}}{\text{hyp}} \cdot \frac{\text{hyp}}{\text{adj}} = \frac{\text{opp}}{\text{adj}}$$

9. Find the ratios of the following functions and then solve for the angle:

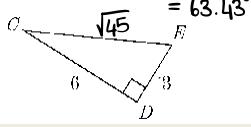
a) $\sin A = A = \sin^{-1} \frac{4}{5}$ $\cos B = B = \cos^{-1} \frac{4}{5}$
 $= 53.13^\circ$ $= 36.87^\circ$



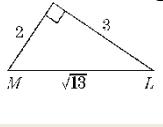
b) $\cos M = M = \cos^{-1} \frac{2}{\sqrt{13}}$ $\tan L = L = \tan^{-1} \frac{2}{3}$
 $= 56.31^\circ$ $= 33.69^\circ$



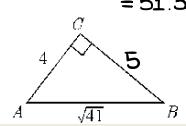
c) $\tan E = E = \tan^{-1} \frac{6}{3} = 63.43^\circ$ $\sin C = C = \sin^{-1} \frac{3}{\sqrt{45}} = 26.57^\circ$



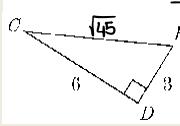
d) $\sin L = L = \sin^{-1} \frac{2}{\sqrt{13}} = 33.69^\circ$ $\cos M = M = \cos^{-1} \frac{2}{\sqrt{13}} = 56.31^\circ$



e) $\tan A = A = \tan^{-1} \frac{5}{4} = 51.34^\circ$ $\cos B = B = \cos^{-1} \frac{5}{\sqrt{41}} = 38.66^\circ$



f) $\cos C = C = \cos^{-1} \frac{6}{\sqrt{45}} = 20.44^\circ$ $\sin C = C = \sin^{-1} \frac{3}{\sqrt{45}} = 26.57^\circ$



10. Find the length of the missing sides for each of the following triangles:

a) $x = ? \cos 55^\circ = \frac{23}{x} \quad x = 14.099 \text{ cm}$

b) $x = ? \tan 28^\circ = \frac{42}{x} \quad x = 78.990 \text{ cm}$

c) $x = ? \tan 36^\circ = \frac{x}{51} \quad x = 37.053 \text{ cm}$

d) $AB = ? \tan 35^\circ = \frac{AB}{12} \quad AB = 8.402 \text{ cm}$
 $BC = ? \cos 35^\circ = \frac{BC}{12} \quad BC = 14.649 \text{ cm}$

e) $a = ? \tan 30^\circ = \frac{7}{a} \quad a = 12.124 \text{ cm}$
 $c = ? \sin 30^\circ = \frac{7}{c} \quad c = 14 \text{ cm}$

f) $AT = ? \quad CA = ?$
 $\frac{AT}{\sin 36.9^\circ} = \frac{AT}{10}$
 $AT = 6.004 \text{ cm}$
 $\frac{CA}{\cos 36.9^\circ} = \frac{CA}{10}$
 $CA = 7.997 \text{ cm}$

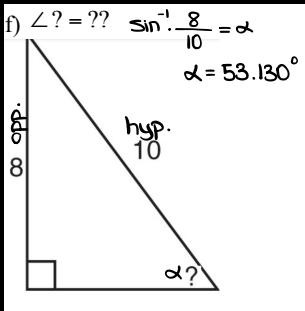
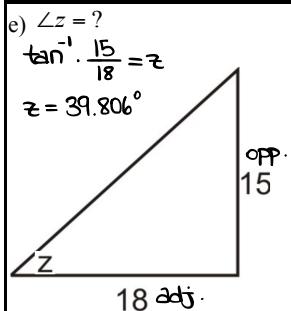
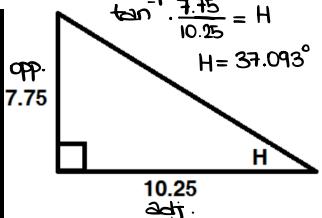
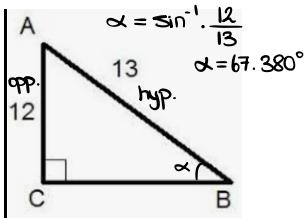
11. Find the degree of the missing angle accurate to 3 decimal places:

a) $\alpha = ? \cos^{-1} \frac{15}{17} = \alpha = 28.072^\circ$

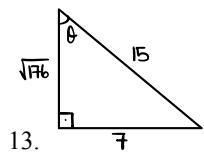
b) $t = ? \sin^{-1} \frac{33}{65} = t = 30.510^\circ$

c) $\angle B = ? \quad \angle A = ?$

d) $\angle H = ?$



12. In a right triangle, you are told that $\sin \theta = \frac{7}{15}$. What is the value of $\cos \theta$ and $\tan \theta$?



$$\cos \theta = \frac{\sqrt{146}}{15}$$

$$\theta = \cos^{-1} \frac{\sqrt{146}}{15}$$

$$\underline{\theta = 27.818^\circ}$$

$$\tan \theta = \frac{7}{\sqrt{146}}$$

$$\theta = \tan^{-1} \frac{7}{\sqrt{146}}$$

$$\underline{\theta = 27.818^\circ}$$

Mayo