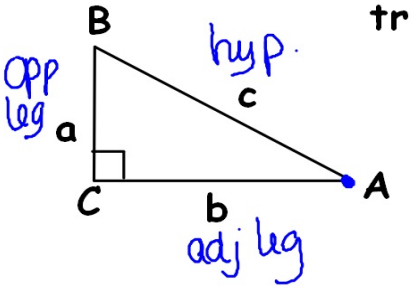
13-1/13-4 Right Triangle Trigonometry

April 16

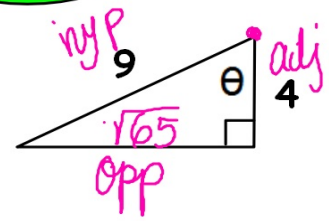


trigonometric ratios:

sine	$= \frac{\text{opp leg}}{\text{hyp}}$	$\sin A = \frac{a}{c}$
cosine	$= \frac{\text{adj. leg}}{\text{hyp}}$	$\cos A = \frac{b}{c}$
tangent	$= \frac{\text{opp. leg}}{\text{adj. leg}}$	$\tan A = \frac{a}{b}$

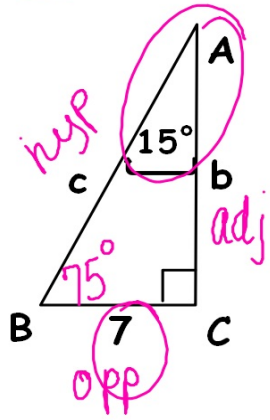
SOH CAH TOA

ex. 1 Find each ratio: θ = theta



$\sin\theta = \frac{\sqrt{65}}{9}$ $\cos\theta = \frac{4}{9}$ $\tan\theta = \frac{\sqrt{65}}{4}$

ex. 2 Solve $\triangle ABC$ $\angle C = 90°, \angle B = 75°$

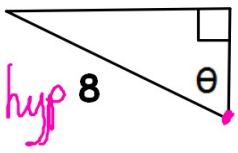


$\frac{\tan 15°}{1} = \frac{7}{b}$ $\quad \sin 15° = \frac{7}{c}$

$b = \frac{7}{\tan 15°}$ $\quad c = \frac{7}{\sin 15°}$

$b \approx 26.1$ $\quad c \approx 27.0$

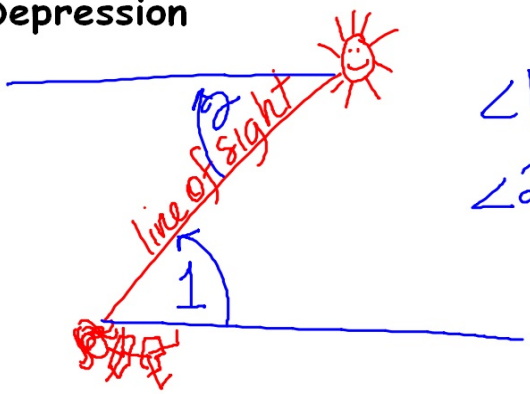
ex. 3 Find the measure of θ.



$\cos\theta = \frac{3}{8}$ $\quad \theta = \cos^{-1}(3 \div 8)$ inverse cosine

$\theta \approx 68.0°$

Angles of Elevation and Depression



$\angle 1 = \angle$ of elevation

$\angle 2 = \angle$ of depression

ex. 4

You are standing at the end of the shadow of a giant Sequoia, 150 feet from its base. The angle of elevation of the sun is 63°. Find the height of the tree.

$\tan 63^\circ = \frac{h}{150}$

$h = 150 * \tan(63^\circ)$

$h \approx 294.4$ ft