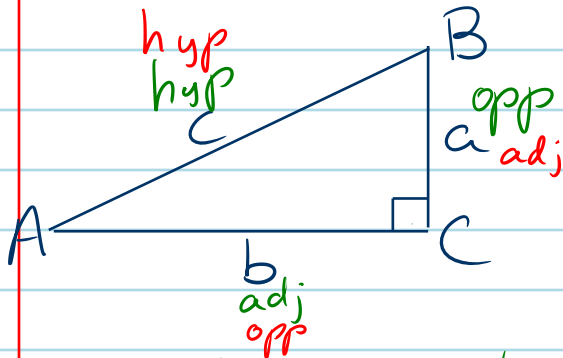


Unit 6 Day 4

6-4 The Tangent Ratio

June 2nd, 2016

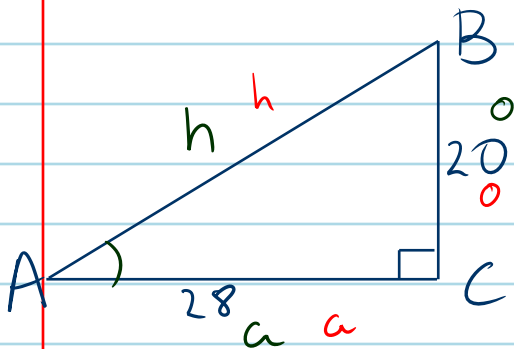


adjacent - means "beside"
 - it's the side that is not the opposite or hypotenuse

From A: opposite a, hypotenuse c, adjacent b
 From B: opposite b, hypotenuse c, adjacent a

tangent ratio: $\tan \theta = \frac{\text{opposite side length}}{\text{adjacent side length}}$
 theta \rightarrow like α for \angle 's.

1) Write the tangent ratio for each acute angle, then solve for that angle.



$$\tan A = \frac{\text{opp}}{\text{adj}}$$

$$\tan A = \frac{20}{28}$$

$$\tan A = \frac{5}{7}$$

$$\tan B = \frac{\text{opp}}{\text{adj}}$$

$$\tan B = \frac{28}{20}$$

$$\tan B = \frac{7}{5}$$

$$\tan^{-1}(\tan A) = \tan^{-1}\left(\frac{5}{7}\right)$$

$$A = \tan^{-1}\left(\frac{5}{7}\right)$$

$$A \approx 35.5^\circ$$

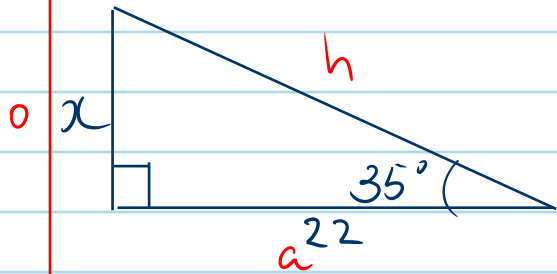
Opposite Operation to tangent is arc tangent (\tan^{-1})

$$\tan^{-1}(\tan B) = \tan^{-1}\left(\frac{7}{5}\right)$$

$$B = \tan^{-1}\left(\frac{7}{5}\right)$$

$$B \approx 54.5^\circ$$

2) Solve for x :



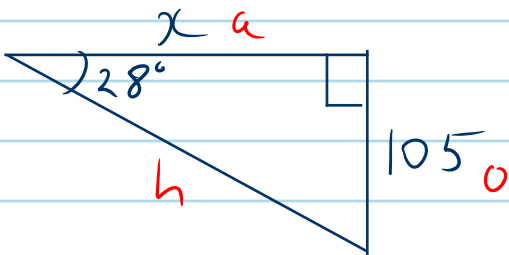
$$\tan 35^\circ = \frac{o}{a} = \frac{x}{22}$$

$$22 \cdot \tan 35^\circ = \frac{x}{22} \cdot 22$$

$$x = 22 \tan 35^\circ$$

$$x \approx 15.4$$

3)



$$\tan 28^\circ = \frac{o}{a} = \frac{105}{x}$$

$$x \tan 28^\circ = \frac{105}{x} \cdot x$$

$$\tan 28^\circ = \frac{105}{x}$$

$$\frac{x \tan 28^\circ}{\tan 28^\circ} = \frac{105}{\tan 28^\circ}$$

$$x = \frac{105}{\tan 28^\circ} \quad \text{Shortcut}$$

$$x = \frac{105}{\tan 28^\circ}$$

$$x \approx 197.5$$

Practice 6-4