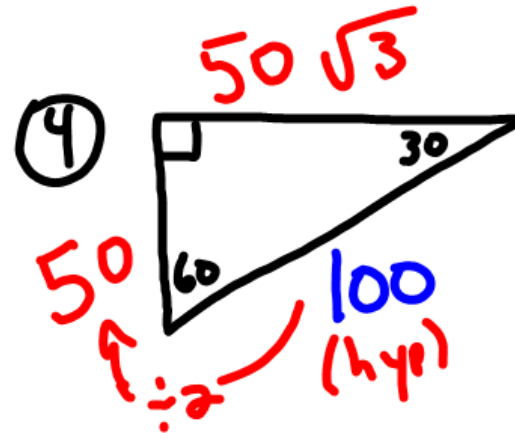
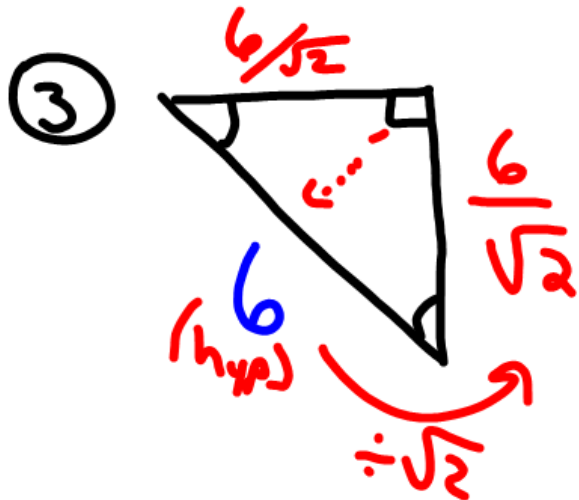
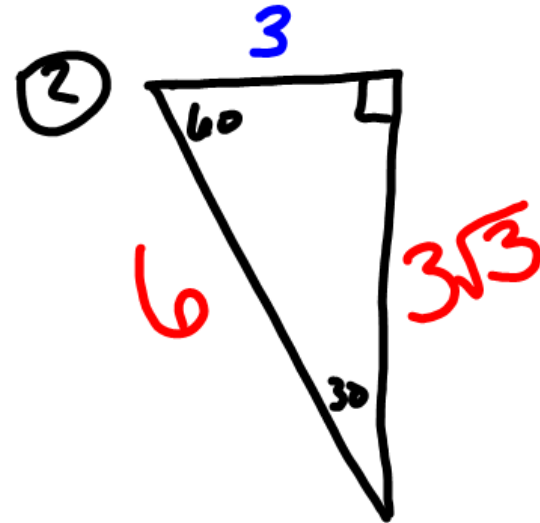
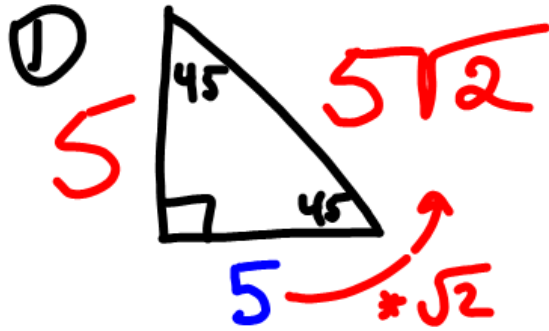


Warm-up

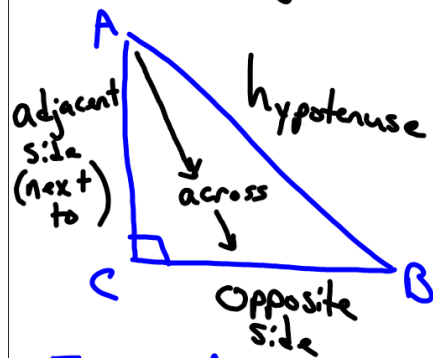
Use special Δ 's to find missing sides



7.5 The Tangent Ratio

* Trigonometric ratio compares 2 sides of a right Δ .

The tangent of an angle is the ratio of the opposite \div adjacent sides.
 - Opp \div adj change when the angle changes

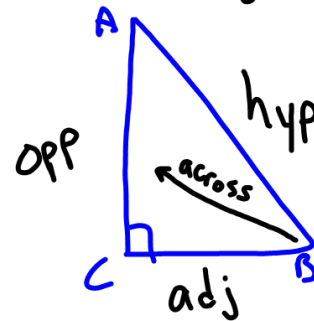


From $\angle A$:

CB = opposite

AC = adjacent

$$\tan A = \frac{CB \text{ (opp)}}{AC \text{ (adj)}}$$



From $\angle B$

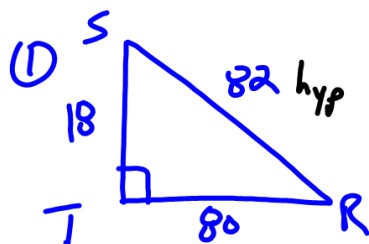
AC = opposite

BC = adjacent

$$\tan B = \frac{AC \text{ (opp)}}{BC \text{ (adj)}}$$

Σ examples

Find $\tan R$ & $\tan S$. Round ratio to 4 decimal places.

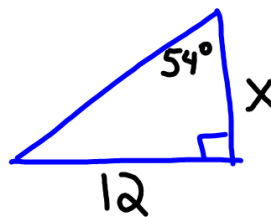


$$\tan R = \frac{18}{80} \text{ opp/adj} \quad \tan S = \frac{80}{18} \text{ opp/adj}$$

$$\tan R = .2250 \quad \tan S = 4.4444$$

② Find the value of x.

$$* \tan \angle = \frac{\text{opp}}{\text{adj}}$$



$$\tan 54^\circ = \frac{12}{x}$$

I - w/decimals

II - Brute force

$$\tan 54^\circ = 1.3763$$

$$\frac{1.3763}{1} = \frac{12}{x}$$

$$\frac{\tan 54}{1} = \frac{12}{x}$$

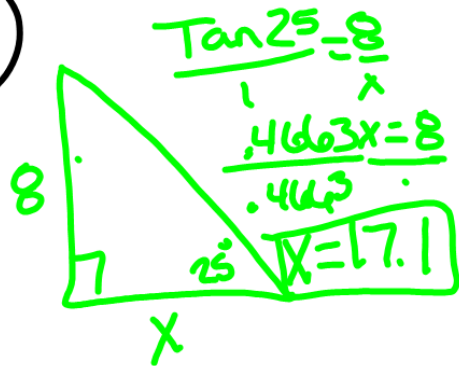
$$\frac{1.3763x}{1.3763} = \frac{12}{1.3763}$$

$$\frac{12}{\tan 54} = \frac{x \cdot \tan 54}{\tan 54}$$

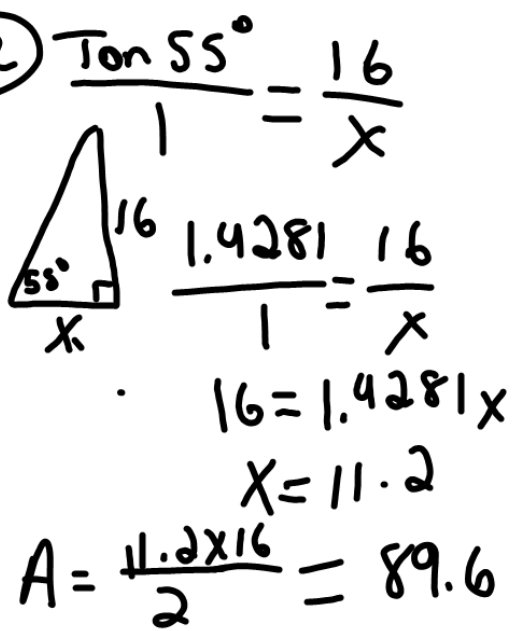
$$x = 8.7$$

$$x = 8.7$$

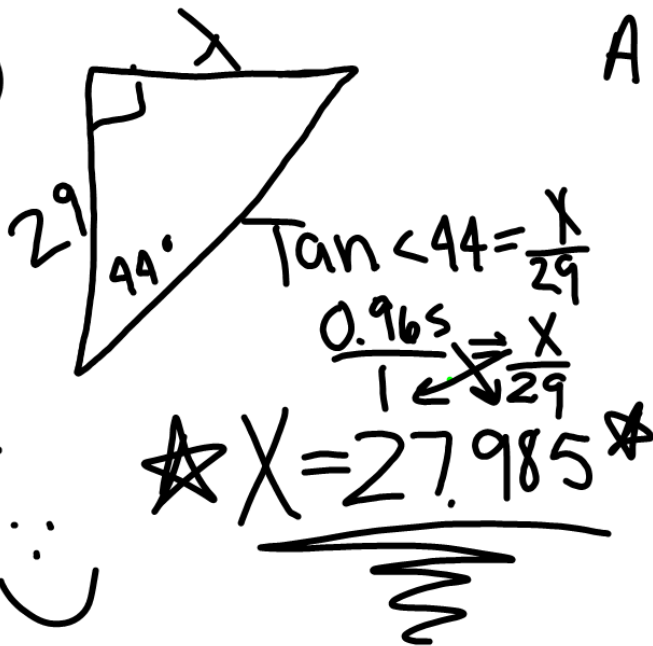
(18)



(22)

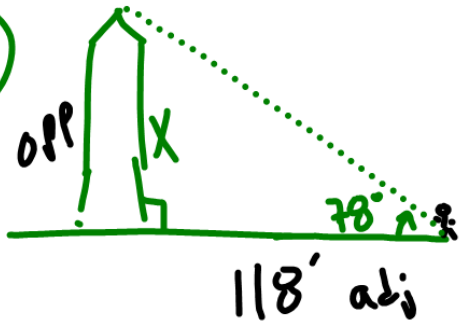


(24)



Yes!
 ☺

(31)



$\tan 78 = \frac{x}{118}$
 $X = 118 \tan 78$
 $= 555'$