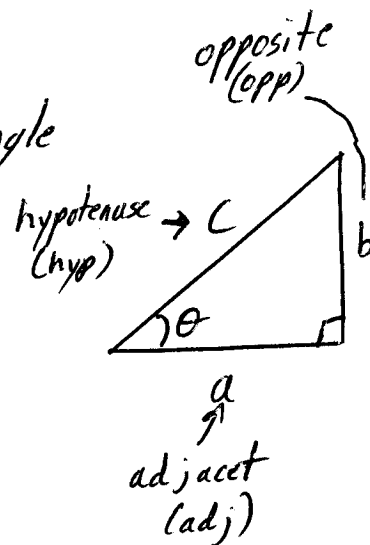


Math 12, Vogler Right Triangles

Defn: Consider the following right triangle



$$1) \sin \theta := \frac{\text{opp}}{\text{hyp}} = \frac{b}{c}$$

$$2) \cos \theta := \frac{\text{adj}}{\text{hyp}} = \frac{a}{c}$$

$$3) \tan \theta := \frac{\text{opp}}{\text{adj}} = \frac{b}{a}$$

$$4) \csc \theta := \frac{1}{\sin \theta} = \frac{\text{hyp}}{\text{opp}} = \frac{c}{b}$$

$$5) \sec \theta := \frac{1}{\cos \theta} = \frac{\text{hyp}}{\text{adj}} = \frac{c}{a}$$

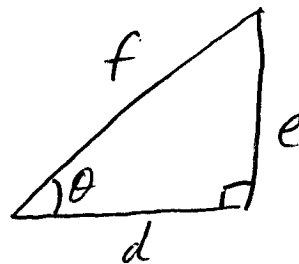
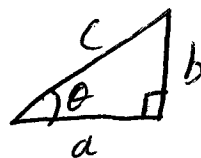
$$6) \cot \theta := \frac{1}{\tan \theta} = \frac{\text{adj}}{\text{opp}} = \frac{a}{b}$$

Notes: 1) Input to these functions are angles.

2) Output of these functions are ratios.

Facts: 1) (Similar Triangles Property)

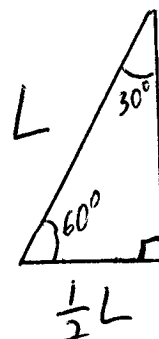
Consider the following triangles



Then, the following ratios hold

$$\frac{a}{c} = \frac{d}{f}, \quad \frac{b}{c} = \frac{e}{f}, \quad \frac{b}{a} = \frac{e}{d}$$

2) In a $30^\circ/60^\circ$ right triangle the side opposite the 30° angle is $\frac{1}{2}$ the hypotenuse.



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