

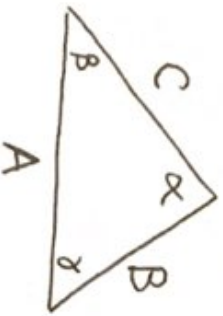
Lesson 18: Section 3.11 Part 2

More Advanced Ways to

Relate Quantities (Step 5)

- Similar Triangles

- Two triangles are similar if they have the same three angle measurements
- The ratio of corresponding side lengths is the same:



$$\frac{A}{a} = \frac{B}{b} = \frac{C}{c}$$

- Trig Functions

- Generally only use $\sin(\theta)$, $\cos(\theta)$, $\tan(\theta)$
- Choose the trig function that only involves quantities whose rates you know or want to know

Using Rates when Substituting and Solving (Step 7)

- On occasion you will need to know the distance something has travelled after a certain amount of time.
Remember:

$$\text{Rate} \cdot \text{Time} = \text{Distance}$$

Practice Problems

1. An aircraft is climbing at a 30° angle to the horizontal. How fast is the aircraft gaining altitude if its speed is 500 miles per hour?

2. Water drains through a conical filter 16 cm high and with a radius measuring 4 cm on the top. Suppose liquid flows out at a constant rate of 2 cubic centimeters per minute. At what rate is the depth changing when the liquid in the cone is 8 cm deep?