### Homework: pg 318 # 1, 2, 4, 6, 8, pg 325 # 1, 2, 5, 6, 8

### Sine Law and Cosine Law

Consider the triangle below.

**B**

**b**

**a**

**c**

**C**

**A**

**Sine Law**

🡪 used to determine a side or angle in a triangle when given a side across from an angle.

### Cosine Law

🡪 used to determine a side or angle in a triangle when working with two sides, its enclosed angle and the opposite side.

#### **Example 1**

Determine the unknown length of side x or angle θ as indicated in the following triangles.

**17 m**

a) b)

**10 m**

**70o**

**80o**

**x**

**12 cm**

**θ**

**60o**

**θ**

**13 m**

c) d)

**7 m**

**5 cm**

**60o**

**x**

**8 cm**

**8 m**

**The Ambiguous Case**

The ambiguous case arises in triangles when we are given the case

Angle-Side1-Side2. If side2 is smaller than side1 then there may be two possible solutions for the triangle. There are two ways to address this scenario

# Example 2

Determine the length of side x.

**5 cm**

**5 cm**

**3 cm**

or

**x**

**x**

**3 cm**

**θ = 30o**

**θ = 30o**

Solution 1 (Using Sine Law)

Solution 2 (Using Cosine Law)