

Area and the Ambiguous Case HW

key

Use Law of Sines/Cosines to solve #1, 2. If two solutions exist, find both.

1.  $A = 76^\circ, a = 18, b = 20$

ASS  
→ LOS

$\frac{\sin 76^\circ}{18} = \frac{\sin B}{20}$   
 $B = \text{ERROR}$

No such  $\Delta$  exists

2.  $A = 58^\circ, a = 11.4, b = 12.8$

ASS  
→ LOS

$\frac{\sin 58^\circ}{11.4} = \frac{\sin B}{12.8}$   
 $B = 72.212^\circ$   
 $C = 49.788^\circ$   
 $c = 10.26$

2nd  $\Delta$ :  $180 - 4B$   
 $180 - 72.212^\circ = 107.788^\circ$   
 $4B = 107.788^\circ$   
 $4C = 14.212^\circ$   
 $C = 3.300$

For #3-8, find the area of the triangle having the indicated angle and sides. (Round or truncate to 3 decimal places.)

3.  $C = 110^\circ, a = 6, b = 10$

SAS

$A = \frac{1}{2}(6)(10)\sin(110^\circ)$

$A = 28.190$

4.  $B = 130^\circ, a = 92, c = 30$

SAS

$A = \frac{1}{2}(30)(92)\sin(130^\circ)$

$A = 1057.141$

5.  $a = 31, b = 23, c = 14$

SSS

$S = \frac{14+31+23}{2}$   
 $S = 34$

$A = \sqrt{34(34-14)(34-31)(34-23)}$

$A = 149.799$

6.  $a = 61, b = 23, c = 47$

SSS

$S = \frac{47+61+23}{2}$   
 $S = 65.5$

$A = \sqrt{65.5(65.5-47)(65.5-61)(65.5-23)}$   
 (Over)

$A = 481.401$