

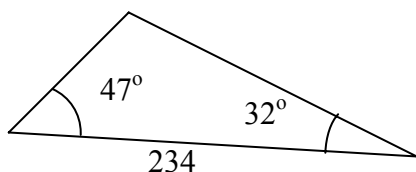
MATHEMATICS 201-009-50

Precalculus
Martin Huard
Fall 2007

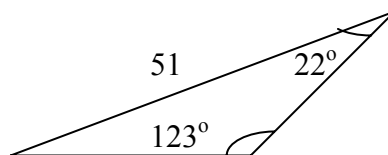
XXIII – Law of Sines and Cosines

1. Solve the following triangles.

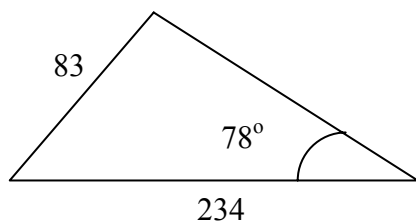
a)



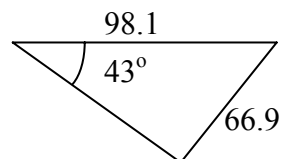
b)



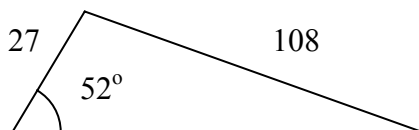
c)



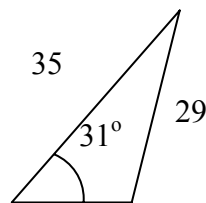
d)



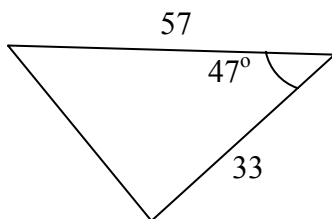
e)



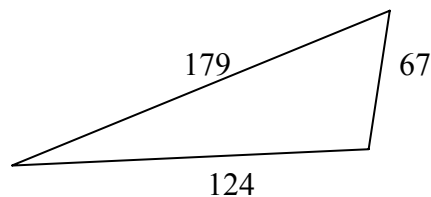
f)



g)



h)



2. Sketch the triangle and solve it.

a) $\angle A = 32^\circ$, $\angle B = 55^\circ$, $b = 29$

c) $a = 115$, $b = 85$, $c = 71$

e) $\angle A = 36^\circ$, $a = 56$, $b = 79$

g) $\angle B = 44^\circ$, $\angle C = 78^\circ$, $a = 259$

i) $\angle A = 53.1^\circ$, $a = 4$, $b = 5$

k) $\angle C = 70^\circ$, $a = 20$, $b = 50$

m) $\angle B = 112^\circ$, $a = 4.3$, $c = 7.9$

o) $\angle C = 67^\circ$, $b = 35$, $c = 25$

q) $\angle B = 120^\circ$, $a = 18$, $b = 45$

b) $\angle A = 29^\circ$, $\angle B = 111^\circ$, $c = 52$

d) $a = 23$, $b = 32$, $\angle C = 55^\circ$

f) $\angle B = 61^\circ$, $b = 89$, $c = 45$

h) $\angle C = 27^\circ$, $a = 143$, $c = 54$

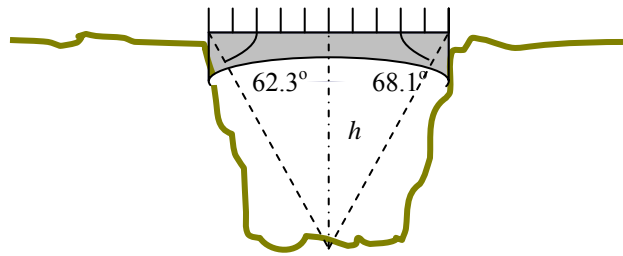
j) $a = 123$, $b = 56$, $c = 83$

l) $\angle B = 18^\circ$, $\angle C = 143^\circ$, $c = 45$

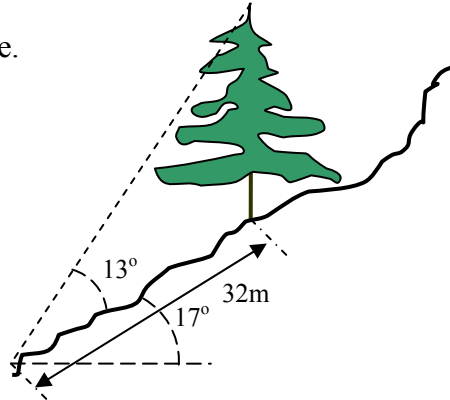
n) $\angle C = 28^\circ$, $a = 46$, $c = 35$

p) $a = 10$, $b = 20$, $c = 25$

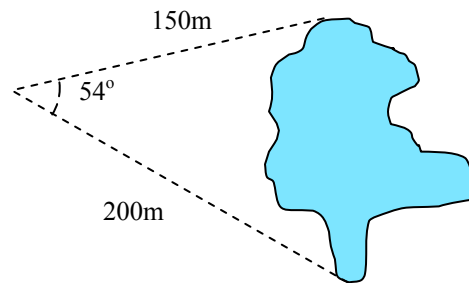
3. Find the height of the bridge if the bridge is 700m long.



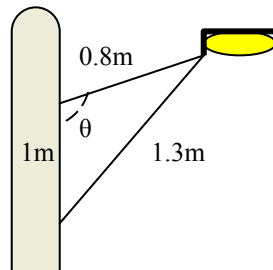
4. Find the height of the tree.



5. Find the width of a lake.

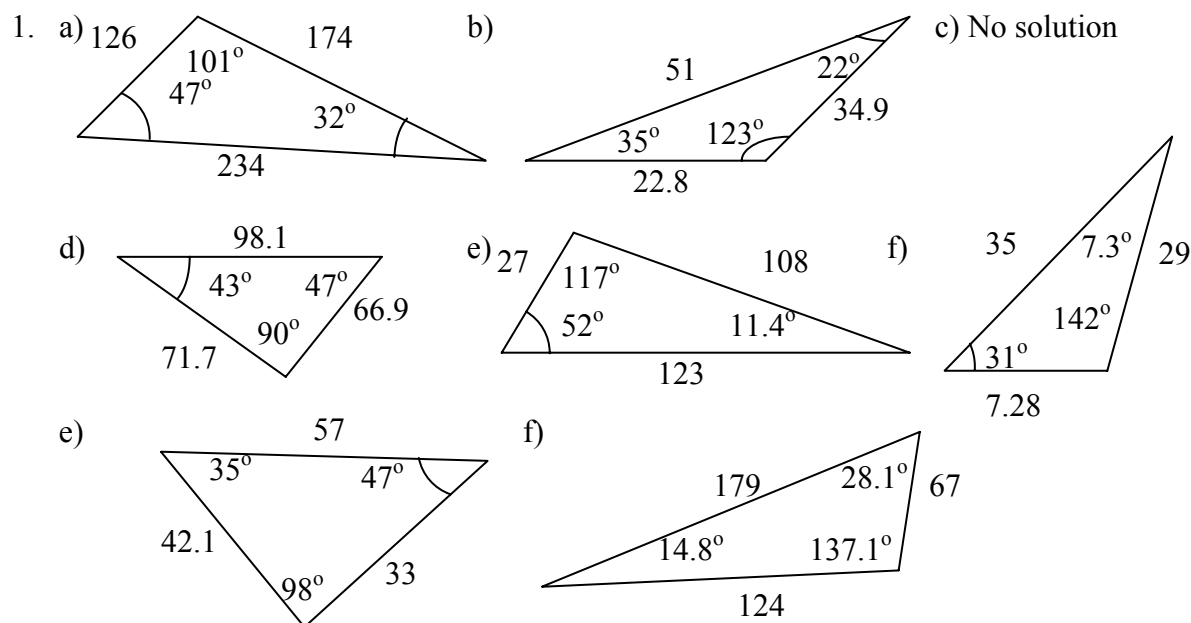


6. Find the angle in the street light.



7. A satellite orbiting the earth passes directly over two tracking stations, which are 75 km apart. How high is the satellite if the angle of elevation with the first station is 84.3° and is 81.5° with the second station.
8. Find the distance between two kites help by a person if the rope to each kite is 51m and 38m respectively, and the angle between the two ropes is 23° .

ANSWERS



2. a) $\angle C = 93^\circ$, $a = 18.8$, $c = 35.4$
 b) $\angle C = 40^\circ$, $a = 39.2$, $b = 75.5$
 c) $\angle A = 94.6^\circ$, $\angle B = 47.5^\circ$, $\angle C = 38.0^\circ$
 d) $\angle A = 45.0^\circ$, $\angle B = 80.0^\circ$, $c = 26.6$
 e) $\angle B_1 = 56.0^\circ$, $\angle C_1 = 88.0^\circ$, $c_1 = 95.2$
 $\angle B_2 = 124^\circ$, $\angle C_2 = 20.0^\circ$, $c_2 = 32.6$
 f) $\angle A = 92.8^\circ$, $\angle C = 26.2^\circ$, $a = 102$
 g) $\angle A = 58^\circ$, $b = 212$, $c = 299$
 h) No solutions
 i) $\angle B = 90.0^\circ$, $\angle C = 36.9^\circ$, $c = 3$
 j) $\angle A = 123.3^\circ$, $\angle B = 22.4^\circ$, $\angle C = 34.3^\circ$
 k) $\angle A = 23.5^\circ$, $\angle B = 86.5^\circ$, $c = 47.1$
 l) $\angle A = 19^\circ$, $a = 24.3$, $b = 23.1$
 m) $\angle A = 22.7^\circ$, $\angle C = 45.3^\circ$, $b = 10.3$
 n) $\angle A_1 = 38.1^\circ$, $\angle B_1 = 113.9^\circ$, $b_1 = 68.2$
 $\angle A_2 = 141.9^\circ$, $\angle B_2 = 10.1^\circ$, $b_2 = 13.1$
 o) No solutions
 p) $\angle A = 22.3^\circ$, $\angle B = 49.5^\circ$, $\angle C = 108.2^\circ$
 q) $\angle A = 20.3^\circ$, $\angle C = 39.7^\circ$, $c = 33.2$
3. 755 m
 4. 8.3 m
 5. 165 m
 6. 91.8°
 7. 1511 km
 8. 21.8 m