Spring '03/MAT 145/Exam 5 **Name:** *Show all your work.*

1. (5pts) Solve a right triangle if $a = 4$ and $\beta = 35°$.

2. (5pts) A 20ft ladder leans against a vertical wall and makes an angle of $67°$ with the ground. How far up the wall does the ladder reach?

Solve the following triangles:

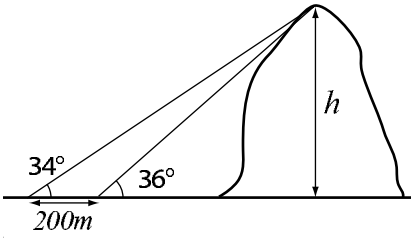
3. (9pts) $a = 4$, $\alpha = 40°$, $\beta = 55°$

4. (9pts) $b = 5$, $c = 7$, $\alpha = 110°$

5. (5pts) Find the area of the triangle if we know that $a = 2$, $b = 5$, $\gamma = 70°$.

6. (7pts) An airplane takes off and flies 40 miles in one direction, then makes a $50°$ turn and flies for another 60 miles. How far is it from the point of departure?

7. (10pts) Two sightings are made of a mountain peak from points 200m apart (see picture). If the angle of elevation of the closer observer is 36° and the angle of elevation of the farther observer is 34°, how tall is the mountain?



Bonus (5pts) Show that a triangle with $a = 4$, $b = 9$, $c = 3$ does not exist.