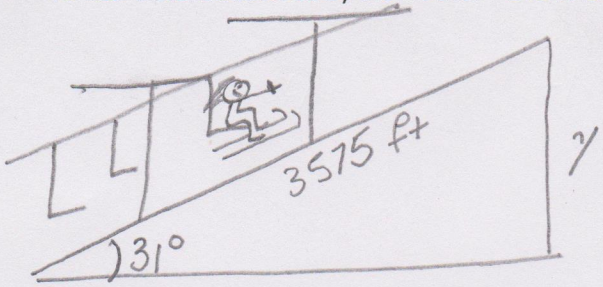
4. In the questions below, draw and solve each question.

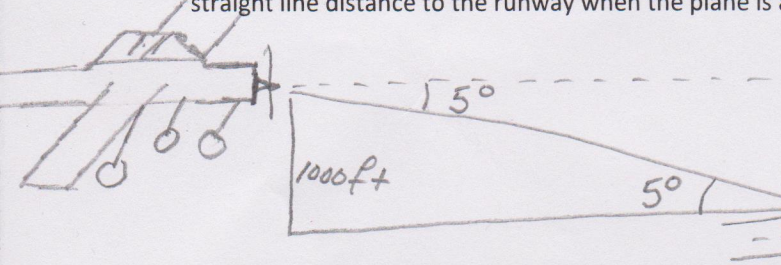
1) A lift chair at a ski resort has an angle of elevation of 31^0 and covers a total distance of 3575 feet. What is the vertical distance covered by the lift chair? **DRAW A PICTURE!**



$\sin 31° = \frac{y}{3575\ ft}$

$y = 1841\ ft$

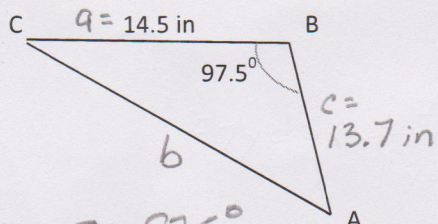
2) You are preparing to land an airplane. Your straight line approach has an angle of depression of 5^0. What is the straight line distance to the runway when the plane is at an altitude of 1000 feet? **DRAW A PICTURE!**



$\sin 5° = \frac{1000\ ft}{HYP}$

$HYP = \frac{1000\ ft}{\sin 5°} = 11,473.7\ ft$

5. Solve each of the triangles below using the law of cosines and/or law of sines.



Find $m\angle C$

$b^2 = a^2 + c^2 - 2ac\cos B$

$b^2 = (14.5m)^2 + (13.7m)^2 - 2(14.5m)(13.7m)\cos 97.5°$

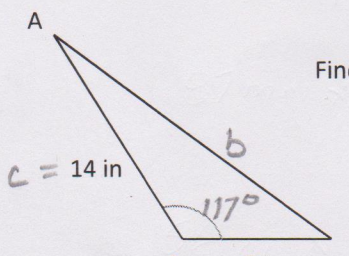
$b^2 = 210.25m^2 + 187.69m^2 - 397.3m^2 \cos 97.5°$

$b^2 = 397.94m^2 - (-51.86m^2)$

$b^2 = 449.8m^2 \qquad b = 21.21m$

$\frac{\sin C}{13.7m} = \frac{\sin 97.5°}{21.21m}$

$C = 39.8°$



Find $\overline{AC}$

$b^2 = a^2 + c^2 - 2ac\cos B$

$b^2 = (8in)^2 + (14in)^2 - 2(8in)(14in)\cos 117°$

$b^2 = 64in^2 + 196in^2 - 224in^2 \cos 117$

$b^2 = 260in^2 - (-101.69in^2)$

$b^2 = 361.69in^2$

$b = 19.02in$