Class Discussion

Unit 6 Topic 2 Law of Cosines

Objective: students will know how to apply law of cosines in applications

Law of Cosines

1. $a^2 = b^2 + c^2 - 2bc\cos A$

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

3. $c^2 = a^2 + b^2 - 2ab\cos C$

Ex1 Solve

(a) $a = 9, b = 19, c = 12$

(b) $A = 34°, b = 4, c = 6$

Ex2 A tree is on a hillside with slope of $15°$ (from horizon), 80 feet downhill where the tree is, the angle of the elevation at the topic of the tree is $71°$. How old is this tree if the average growth rate is about 2 feet per year?

Ex3 Two watch towers spotted the same forest fire with bearings $N42°E$ (from A) and $N36°W$ (from B). If A and B are 12 miles apart and the bearing of tower A from B is $S75°W$. The rescue center C is 7 miles away from tower B with bearing $S38°W$ when observed from B.

(a) Find the bearing for a helicopter pilot to set from the rescue center to the fire?

(b) If the average of the helicopter pilot is 40 mph how long will it take to reach the fire?