Honors Trigonometry

Name _____

Copy original problem.

Per _____   Date _____

Convince *me* that **you** understand the concept*!*

Chapter 5 Exam

I For each of the following you will be solving application problems. You need to solve for only the items expressly requested. There may be more than one solution to a question. You are expected to supply all appropriate solutions. Draw the pict. Label it. Write what ever formula you will use and list the numbers you are using. You *must* convince me *you* computed the answer in a proper manner! Answer the question using a complete sentence.

A) On all professional baseball fields, the bases are 90 feet apart. The distance from homeplate to dead center of the Wrigley Field is 400 feet. How far is it from dead center to Third Base? See diagram. (15 pts)

B) On Wednesday a cruise ship leaves port at 3 pm maintaining an average speed of 15 knots in going from San Juan, Puerto Rico, to Barbados, West Indies, a distance of 600 nautical miles. To avoid a tropical storm, the captain heads out to San Juan in a direction of 20 degrees off of direct heading to Barbados. The captain maintains the 15 knot speed for 10 hours, after which time the path to Barbados becomes clear of storms. (20 pts tot)

    1) Through what angle should the captain turn to head directly to Barbados?

    2) To the nearest minute, when does the cruise ship arrive?

C) To an observer on Earth at a particular time, the angle between lines joining Venus to Earth and the Earth to the Sun is 29 degrees. The distance from Venus to the Sun is 67 million miles, whereas the distance from the Earth to the Sun is 93 million miles. To the nearest million miles, how far is Venus from Earth? (20 pts)

D) At another time, the observer sees that Venus is still 67 million miles from the Sun, Earth is still 93 million miles from the Sun and Venus is 100 million miles from Earth. What is the angle between straight lines joining Earth to the Sun and Earth to Venus? (10 pts)

E) An aircraft is spotted by two observers who are 1000 feet apart. As the plane passes over the line joining them, each observer takes a sighting of the angle of elevation to the plane. Jake measures the angle at 35° and Jed measures his angle at 40°.   How high is the aircraft? (20 pts)
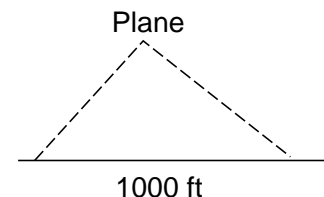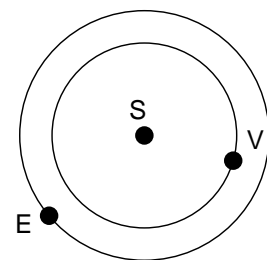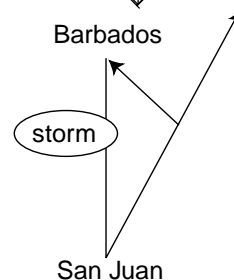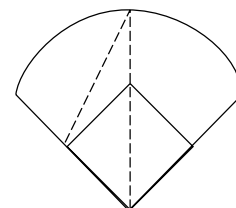
II Solve for $0° \leq \theta < 360°$ given: $4\sin\theta\cos\theta = 1$ (15 pts)

Extra Credit ---------------------------------- **5 pts** --

Solve for $0° \leq \theta < 360°$ given: $\cos 2\theta - \cos 6\theta = 0$