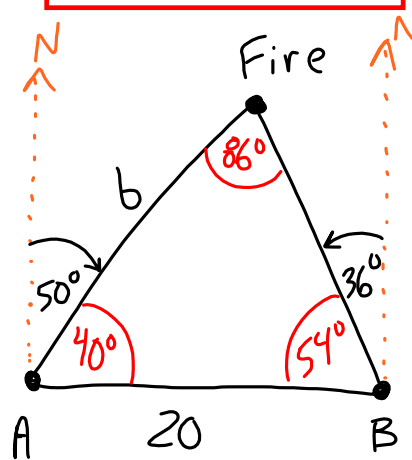
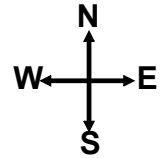


4.8 - Day 4 - Law of Sines/Cosines Applications

EXAMPLE 7 An Application of the Law of Sines

Two fire-lookout stations are 20 miles apart, with station B directly east of station A. Both stations spot a fire on a mountain to the north. The bearing from station A to the fire is N50°E (50° east of north). The bearing from station B to the fire is N36°W (36° west of north). How far, to the nearest tenth of a mile, is the fire from station A?

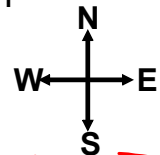
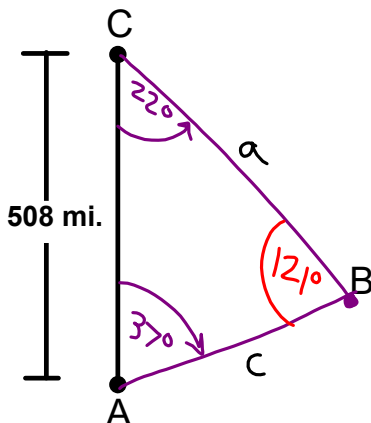
HW 4.8 - Applications - Day 4
#s: 39, 40, 46



$$\frac{b}{\sin(54)} = \frac{20}{\sin(86)}$$

$$b = 16.2 \text{ miles}$$

A boat leaves harbor A. The boat travels on a bearing of 37° east of north for harbor B. At the same time, a boat leaves harbor C 508 miles directly due north of harbor A at a bearing of 22° east of south also headed for harbor B. What is the distance between harbors A to B and C to B?



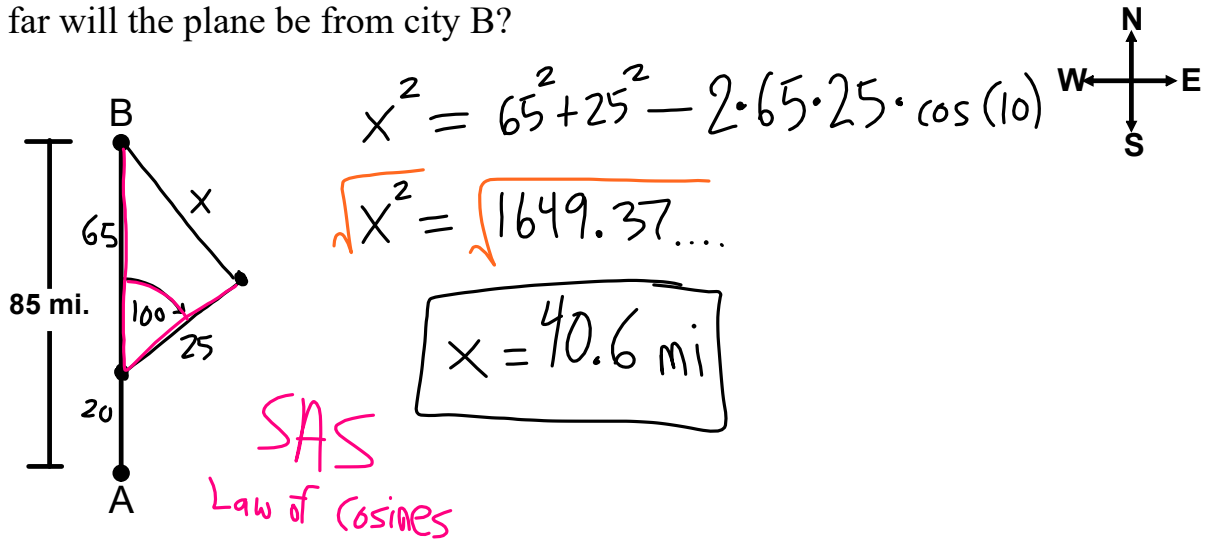
$$\frac{508}{\sin(121)} = \frac{a}{\sin(37)}$$

$$a = 356.7 \text{ mi}$$

$$\frac{508}{\sin(121)} = \frac{c}{\sin(22)}$$

$$c = 222 \text{ mi}$$

A pilot is flying from city A to city B, which is 85 miles due north. After flying 20 miles north, the pilot must change course and fly 10° east of north to avoid a storm. If the pilot stays on this course for 25 miles, how far will the plane be from city B?



Two airplanes leave an airport at the same time on different runways. One flies on a bearing of N66°W at 325 miles per hour. The other airplane flies on a bearing of S26°W at 300 miles per hour. How far apart will the airplanes be after two hours?

