

FM 11 Lesson 4.4

Monday, April 10, 2017 12:55 PM

FOM 11

4.4 Solving Problems Using Obtuse Triangles

Example 1: Three circles of radius 3, 5, and 7 cm are tangent to each other. Find the largest angle formed by joining their centers.

Example 2: A plane is sighted by two observers 1 km apart at angles 74° and 78° . The observers and the plane are in the same vertical plane. How high is the plane?

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$$\frac{y}{\sin 74^\circ} = \frac{1}{\sin 4^\circ}$$

$$y = 13.78$$

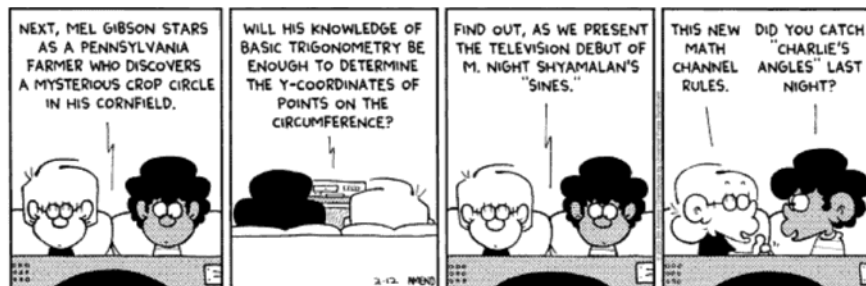
$$\sin 78^\circ = \frac{x}{13.78}$$

$$x = \boxed{13.48 \text{ km}}$$

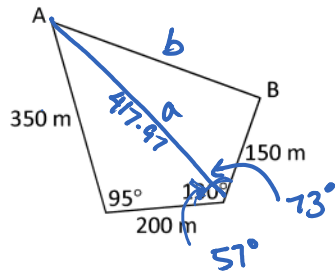
$$\frac{a}{\sin 78^\circ} = \frac{1}{\sin 28^\circ}$$

$$a = 2.08 \text{ km}$$

$$\sin 74^\circ = \frac{x}{2.08}$$

$$x = \boxed{2.0 \text{ km}}$$


Example 3: An irregular plot of land has dimensions as shown. Find AB.



$$a^2 = 350^2 + 200^2 - 2(350)(200)\cos 95^\circ$$

$$a = 417.97$$

$$\frac{\sin c}{350} = \frac{\sin 95^\circ}{417.97}$$

$$c = 57^\circ$$

$$b^2 = 417.97^2 + 150^2 - 2(417.97)(150)\cos 73^\circ$$

$$b = 400.67 \text{ m}$$

$$\boxed{AB = 400.67 \text{ m}}$$

Example 4: From the top of a 30 m observation tower, a fire ranger observes smoke at a bearing of 90° with an angle of depression of 5° . The ranger spots more smoke at a bearing of 200° with an angle of depression of 2° . How far apart are the sources of smoke (to the nearest metre)?

Assignment: ~~pg 194 #2-5, 8-10, 13, 14~~

P.183 # 1, 2, 4 (a, c), 5, 6

P.193 # 1-5