

Law of Sines

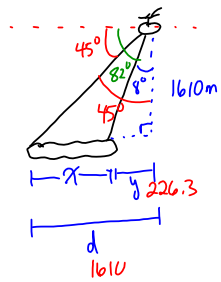
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Law of Cosines

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

§4-4 Solving Problems Using Obtuse Triangles

Example 1 (p188)



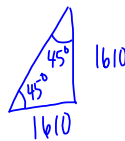
Small right Δ

$$\tan 8^\circ = \frac{y}{1610m}$$

$$y = (1610m) \tan 8^\circ$$

$$y = 226.3m$$

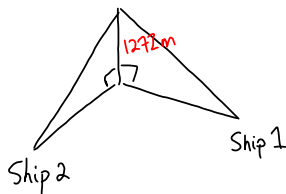
Big right Δ



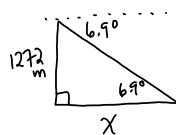
$$x = 1610 - 226.3$$

$$x = 1383.7m$$

Example 2 (p191)



Ship 1



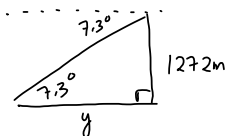
$$\tan 6.9^\circ = \frac{1272m}{x}$$

$$x \tan 6.9^\circ = 1272m$$

$$x = \frac{1272m}{\tan 6.9^\circ}$$

$$x = 10511.2m$$

Ship 2

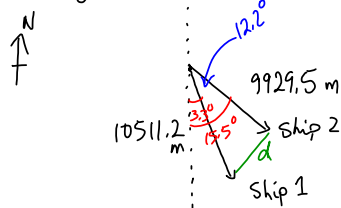


$$\tan 7.3^\circ = \frac{1272m}{y}$$

$$y = \frac{1272m}{\tan 7.3^\circ}$$

$$y = 9929.5m$$

Bird's Eye View



Law of Cosines

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

$$d^2 = (10511.2)^2 + (9929.5)^2 - 2(10511.2)(9929.5) \cos 12.2^\circ$$

$$d = 2247.8m$$