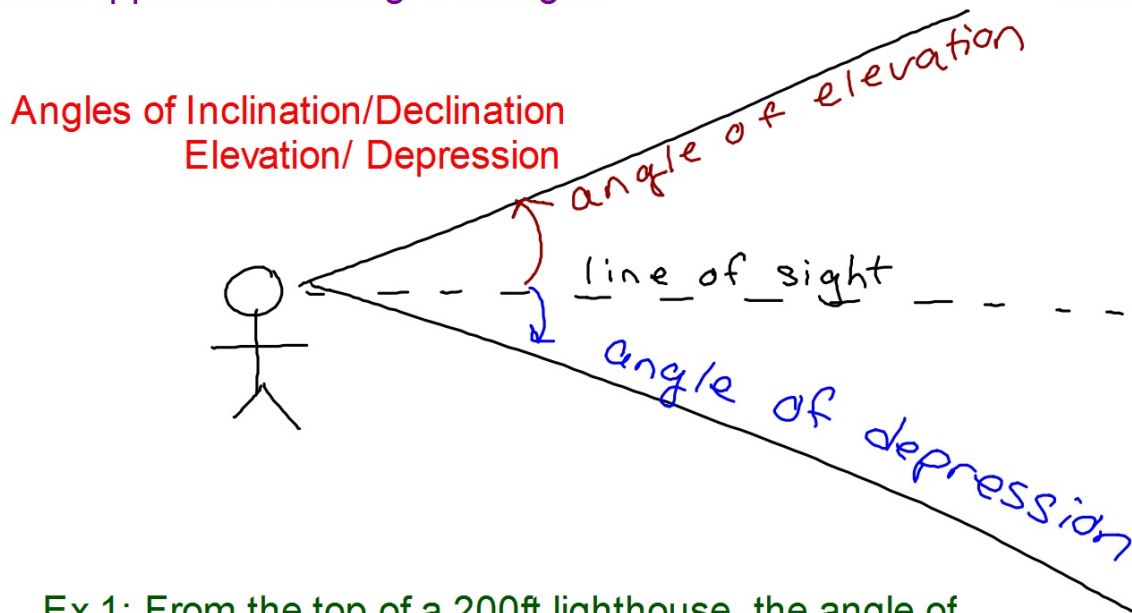


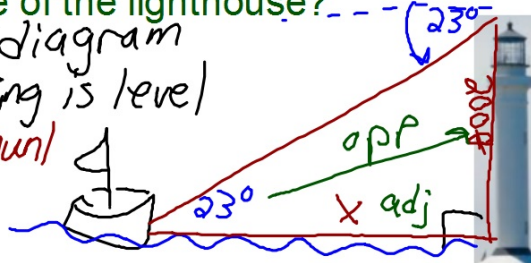
11.2 Applications of Right Triangles

3/11/19



Ex 1: From the top of a 200ft lighthouse, the angle of depression to the sea is 23 degrees down to a ship. How far is the ship from the base of the lighthouse?

- * Draw a picture/diagram
- * Assume everything is level
- * label all known/unknown

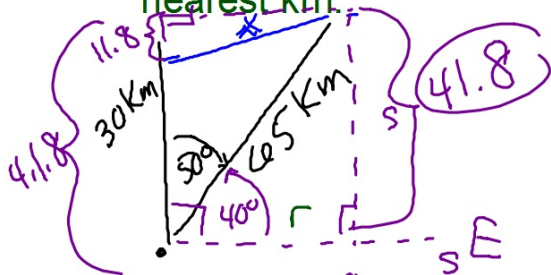


$$\begin{aligned}\tan \theta &= \frac{\text{opp}}{\text{adj}} \\ \tan 23^\circ &= \frac{200}{x} \\ x &= \frac{200}{\tan 23^\circ} \\ x &\approx 471.4\end{aligned}$$

Ex2: Two ships leave dock at the same time.

Ship A sails due north for 30km before dropping anchor.

Ship B sails on a bearing of 050 degrees for 65 km before dropping anchor.
Find the distance between the ships when they are stationary, to the nearest km.



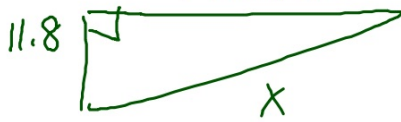
$$\sin 40^\circ = \frac{s}{65}$$

$$s = 65 \sin 40^\circ \approx 41.8 \text{ km}$$

$$\cos 40^\circ = \frac{r}{65}$$

$$r = 65 \cos 40^\circ \approx 49.7928 \dots$$

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even



$$x = \sqrt{11.8^2 + 49.79^2} \approx 51.1 \text{ km}$$

(51 km)

* bearing is measured in degrees clockwise from North

