

Right Triangle Trigonometry

Objective:

Students will use trigonometric functions to model and solve real-life problems.

Calculator in degrees

Study Problems:

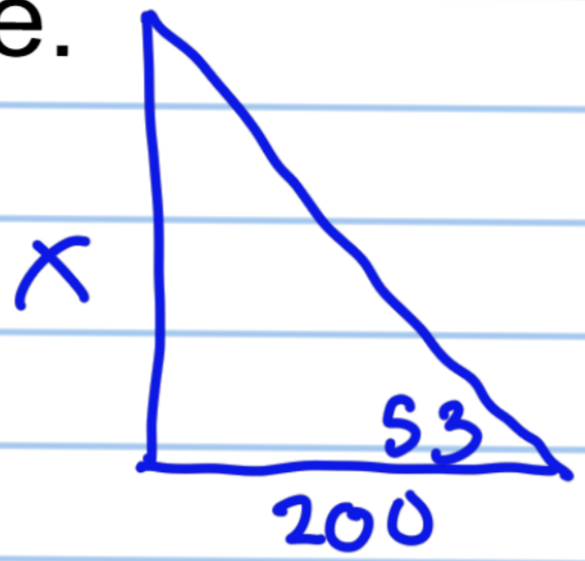
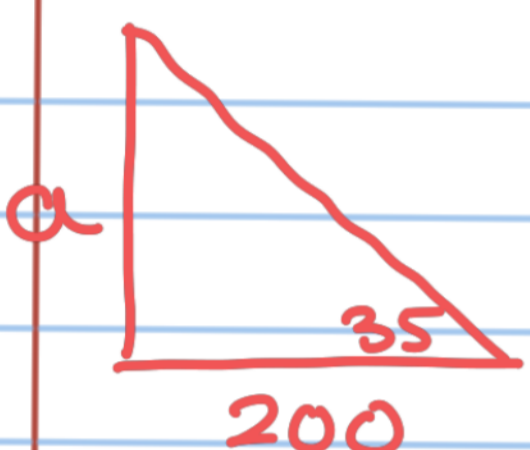
Pg 311 #57, 65, 67, 69

& Pg 362 #21, 37, 39

Example

Sohcahtoa

At a point 200 ft from the base of a building, the angle of elevation to the top is 53. Find the height s of the smokestack alone.

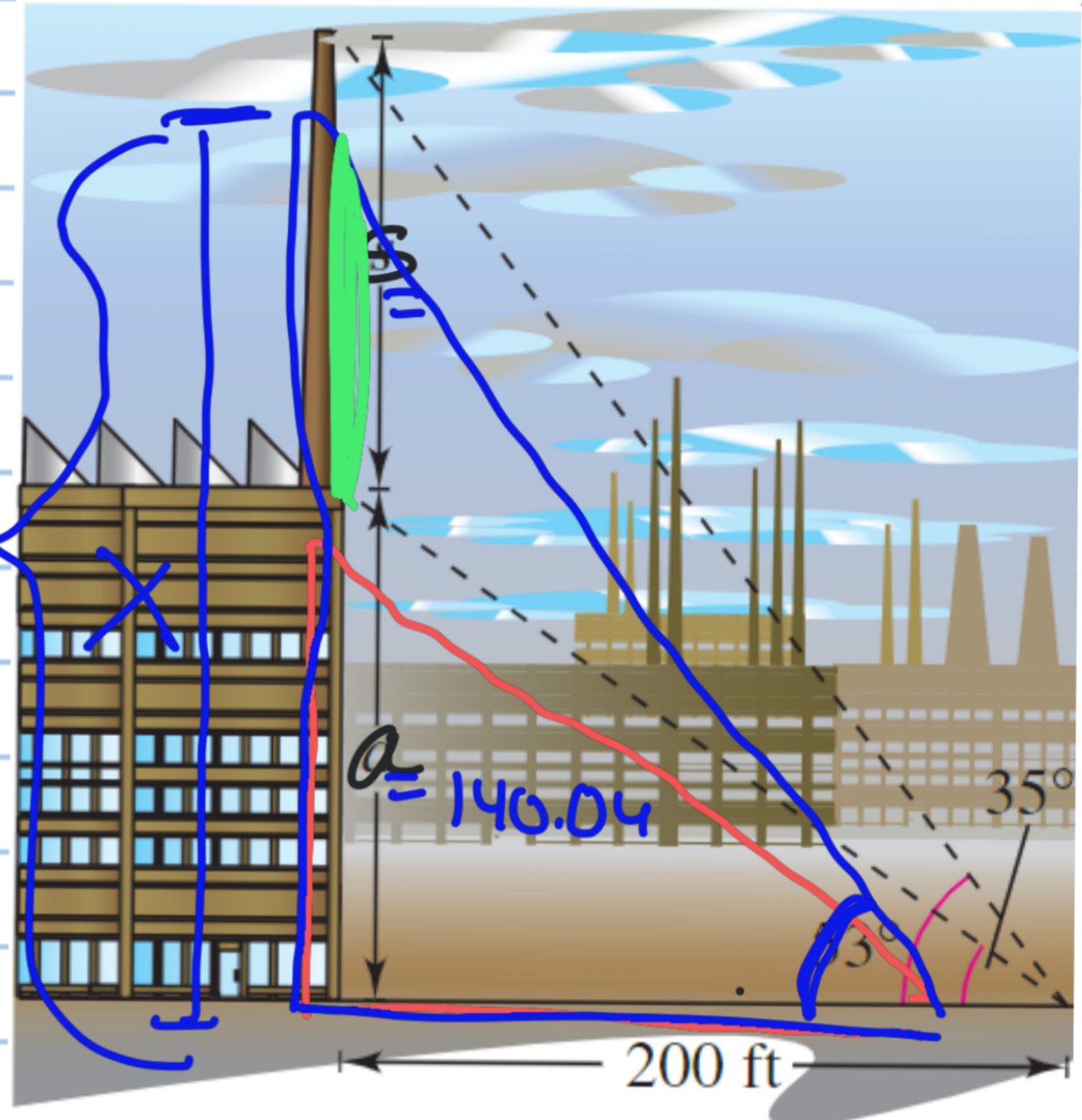


$$\tan 35 = \frac{a}{200}$$

$$\tan 53 = \frac{x}{200}$$
$$200 \tan 53 = x$$
$$265.414 \approx x$$

$$200 \tan 35 = a$$
$$140.04 \text{ ft} = a$$

The height of the smokestack is 125.367 ft.



$$\begin{array}{r} 265.41 \\ - 140.04 \\ \hline 125.367 \text{ ft} \end{array}$$

Example

A tree 40 feet high cast a shadow 58 feet long. Find the measure of the angle of elevation of the sun.

The sun's angle of elevation is 34.592 degrees.



$$\tan \theta = \frac{40}{58}$$

$$\theta = \tan^{-1} \frac{40}{58}$$

$$\theta \approx 34.59$$