Day 5: Angle of Elevation

Friday, September 20, 2013 9:34 AM

AW Math 11 **Name:**

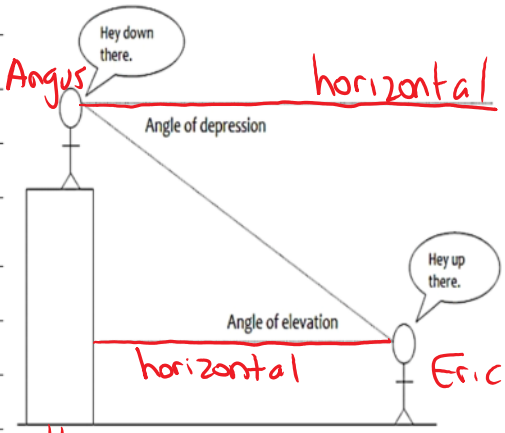
DAY 5 *Angle of Elevation class notes*

Angle of Elevation

- formed by line of sight upwards from horizontal

Angle of Depression (Declination)

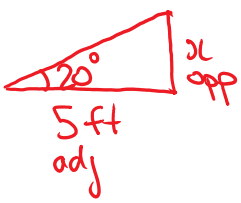
- Line of sight is downwards from horizontal



Both angles equal each other

EXAMPLE 1

A skateboard ramp runs 5 feet and has an angle of elevation of 20°. What is the height of the ramp?



$\tan\theta = \frac{opp}{adj}$

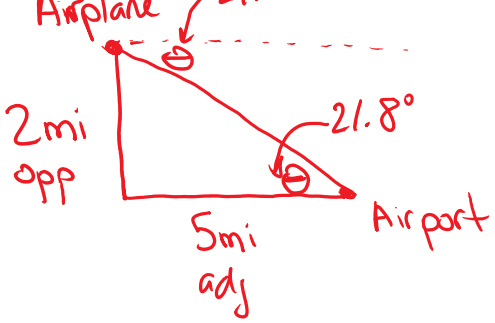
$\tan 20° = \frac{x}{5}$

$\tan 20° \times 5 \div 1$

$x = 1.8\text{ ft}$

EXAMPLE 2

An airplane is flying at a height of 2 miles above the ground. The distance along the ground from the airplane to the airport is 5 miles. What is the angle of depression from the airplane to the airport?



Remi: angle of dep. Same as angle of Elev.

$\tan\theta = \frac{2}{5}$

$\tan\theta = 0.4$

2nd $\tan 0.4 = 21.8°$

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AW Math 11 **Name:**

DAY 5 *Angle of Elevation assignment*

1. John wants to measure the height of a tree. He walks exactly 100 feet from the base of the tree and looks up. The angle from the ground to the top of the tree is 33^0. How tall is the tree?

$\tan\theta = \frac{opp}{adj}$

$\frac{\tan 33}{1} = \frac{x}{100}$

$\tan 33 \times 100$

$= 65\,ft$

2. A building is 50 feet high. At a distance away from the building, an observer notices that the angle of elevation to the top of the building is 41°. How far is the observer from the base of the building?

3. An airplane is flying at a height of 3 miles above the ground. The distance along the ground from the airplane to the airport is 8 miles. What is the angle of depression from the airplane to the airport?

4. A campsite is 9.41 miles from a point directly below the mountaintop. If the angle of elevation is 12 degrees from the camp to the top of the mountain, how high is the mountain?

5. At a point 42.3 feet from the base of a building, the angle of elevation of the top is 75^0. How tall is the building?

6. How far from the door must a ramp begin in order to rise 3 feet with an 8^0 angle of elevation?

7. An A-frame cabin is 26 feet high at the center and the angle the wall makes with the base is 53^0. How wide is the base?

8. A building casts a shadow of 110 feet. If the angle of elevation from that point to the top of the building is 29^0, find the height of the building.

9. A building is 41.29 ft tall. The shadow cast by the building is 46.83 ft. Find the angle of elevation of the sun.

10. Joanna knows that when she stands 134 ft from the base of a flagpole, the angle of elevation to the top of the flagpole is 27^0. If her eyes are 5.4 ft from the ground, find the height of the flagpole.