## How to hook students into learning. (How I try to keep my students interested in studying *Trigonometry*.)

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## During the first week:

Redefining: the definition of an angle as a result of rotation, (+,-) sine and cosine of an angle as coordinates of a point on a Unit Circle

New terminology: angles in standard position, positive and negative angles, coterminal angles, reference angles, quadrantal angles, new measurement of angles: DMS, radians

My experience tells me that from time to time I need to give my students an opportunity to know how it feels to have accomplished enormously difficult or even impossible (at a glance ©) task of mental work. But that task has to be really meaningful for them!!! Problem 1 You are in Quito, Ecuador. As Earth revolves on its axis,

What is the angular speed in rad/h?

What is your linear speed in mph?

Assume that radius of Earth is 3960 mi.









Students: We can not answer the question, because there is no data.

Teacher: What kind of knowledge about Earth could help?



- 1. It takes 24 hours to make one full revolution.
- 2. One revolution is 2Pi radian angle or 360 degrees.
- 3. The arc length for a full revolution becomes a circumference of the equator
- 4. The radius of Earth is given 3960 miles



Commercial jets cruise at about 550 mph (885 kmph), according to MIT













72. HEIGHT OF A MOUNTAIN In traveling across flat land, you notice a mountain directly in front of you. Its angle of elevation (to the peak) is 3.5°. After you drive 13 miles closer to the mountain, the angle of elevation is 9°. Approximate the height of the mountain.



## What is the approximate volume of a reservoir like this?



















## Closure:

What do I observe in my classroom when I provide problem solving experiences like this?

- Puzzlement
- Engagement
- Collaboration
- Excitement
- Ownership of learning
- Connection with real life

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