

Trigonometry and Animation Graphics

What's an easy way to get graphics like "eyes" in a video game to always be looking right at a character no matter where the gamer moves him with his controller? Trigonometry, of course! It's trigonometric functions that input the character's position in real time, based on where the gamer's controller moves him. Those functions then output the angles needed to orient the "eyes" based on their locations. Basic trig functions that programming languages provide are very helpful for various graphics and animation techniques like the one just mentioned. The sine, cosine, and tangent functions are also very handy in games and graphical programs because of the smooth wave-like pattern their return values produce.



Eyes Observing

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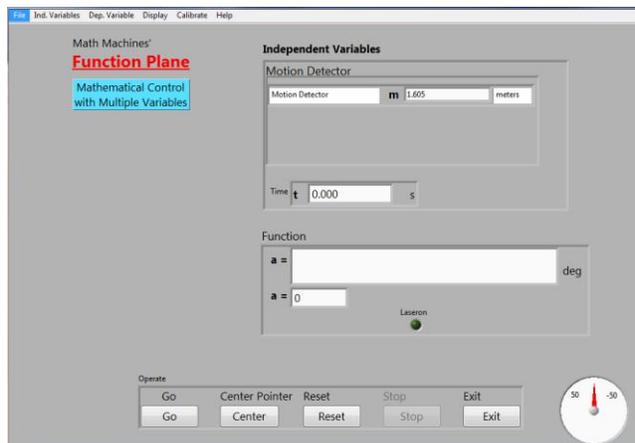
Task: Your task will be very much like what was mentioned above. You will use a motion sensor to locate the position of a real person. A function will then need to be created to input distance data from the sensor and output an angle to turn the laser so that it follows the person in real time as he moves back and forth in front of the sensor. The picture below illustrates the setup.

Additional Materials: Motion detector, measuring stick or tape.

Math Machines Program:

Function Plane

Activity File: FollowMan001



3. What would you give as practical domain and range for your function?

Domain: _____ Explain how you arrived at this.

Range: _____ Explain how you arrived at this.

4. How important is the use of variables and functions in this activity?

Challenge activity: If your instructor chooses, you may work on a separate setup such as the one below.

