———————

20100212---0214

The " Trigonometric Problem" has been retired for awhile. At least until I get some fresh ideas.

However in trying to solve this problem 2 *properties of the Ssine and Scosine have been found.*

These new ideas rely on the fact that:

$$\frac{1}{L} * \cos(\theta_2) = L * \sin(\theta_2)$$

This equation means that L, (*the length for* 2 *equal radius at different angles, to have the same horizontal* or *vertical length*), *is inversely proportional where the sine and cosine occur. This must be true for the following equations to work.*

Observation #1

$$\frac{1}{L} * \cos(\theta_2) = L * \sin(\theta_2)$$

simply multiply both sides by L

$$\cos(\theta_2) = L^2 * \sin(\theta_2)$$

or *simply divide by* L

$$\frac{\cos(\theta_2)}{L^2} = \sin(\theta_2)$$

Observation #2

$$y = \frac{x}{L^2}$$

Here is the equation that this was derived from. (My best attempt so far to utilize the Ssine and Scosine.)

for hypotenuse of "3" :

$$y = [x * \sin(\theta_2)] + [L * \sin(\theta_2)]$$

$$where\ \sin(\theta_2) = \frac{y}{3}$$

To use substitution we need to put y in terms of x.

Using the 2 above observations we have:

$$y = [x * \frac{\cos(\theta_2)}{L^2}] + [\frac{1}{L} * \cos(\theta_2)]$$

simplify:

$$y = [x * \frac{\frac{x}{3}}{(3\text{-}x)^2}] + [\frac{1}{3\text{-}x} * \frac{x}{3}]$$

$$y = [x * [\frac{x}{3} * \frac{1}{x^2 \text{ - } 6x + 9}]] + [\frac{1}{3\text{-}x} * \frac{x}{3}]$$

$$y = [\frac{x^2}{3(x^2 \text{ - } 6x + 9)}] + [\frac{x}{3(3\text{-}x)}]$$

add both fractions by multiplying by LCD

$$y = [\frac{x^2 * (3\text{-}x)}{3(x^2 \text{ - } 6x + 9) * (3\text{-}x)}] + [\frac{x * (x^2 \text{ - } 6x + 9)}{3(3\text{-}x) * (x^2 \text{ - } 6x + 9)}]$$

$$y = \frac{-3x^2 + 9x}{3(3-x)(x^2 - 6x + 9)}$$

$$y = \frac{3*x(-x + 3)}{3 *(3-x)(x^2 - 6x + 9)}$$

$$y = \frac{x}{(x^2 - 6x + 9)}$$

$$y = \frac{x}{(3-x)^2}$$

$$L = (3-x) \; so$$

$$y = \frac{x}{L^2}$$