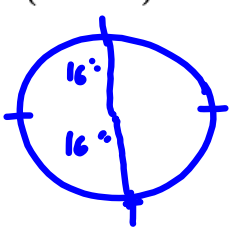
Day 8: Application #1

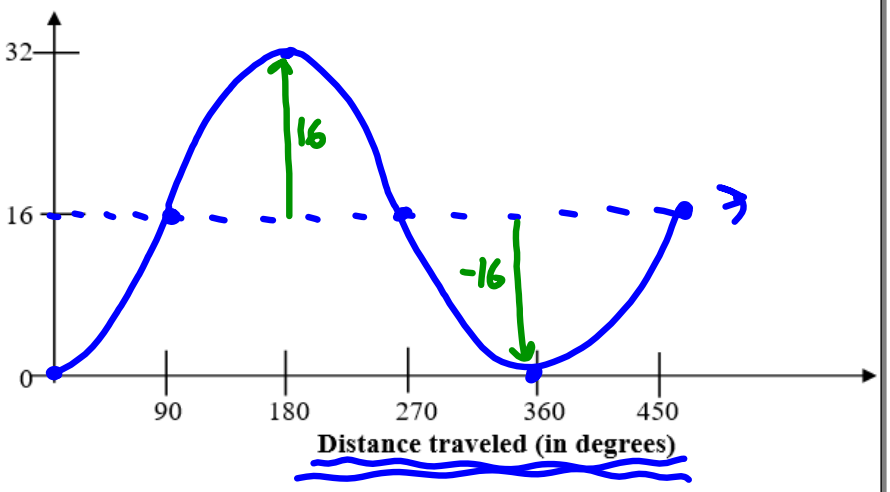
Feb 6-7:01 PM

A car's tire has a diameter of 32 inches. It runs over a nail, but it is able to continue moving. Write a **cosine** function that describes *the height of the nail above the ground* as a function of the wheel's *angular distance*.

A. Sketch the curve

Max 32
Min 0





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B. Identify the vertical shift $f(x) = A \cos(\omega(x-h)) + k$

K : 16

A C. Identify the amplitude

amp : 16

D. Find the horizontal shift

none

ω E. Find the cycle (distance of each rotation) and period
Since the function will consist of angular distance, we'll use 360 degrees for each cycle.

1 cycle in 360° ω : 1

F. Write the equation to model this situation.

$f(x) : -16\cos(1x) + 16$

G. If the car wheel frame covers the top half of the wheel, when will the nail be visible?

(0,90) (270,450)

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amp

[-3, 3]

±K +S

[,]

Nov 12-4:33 PM