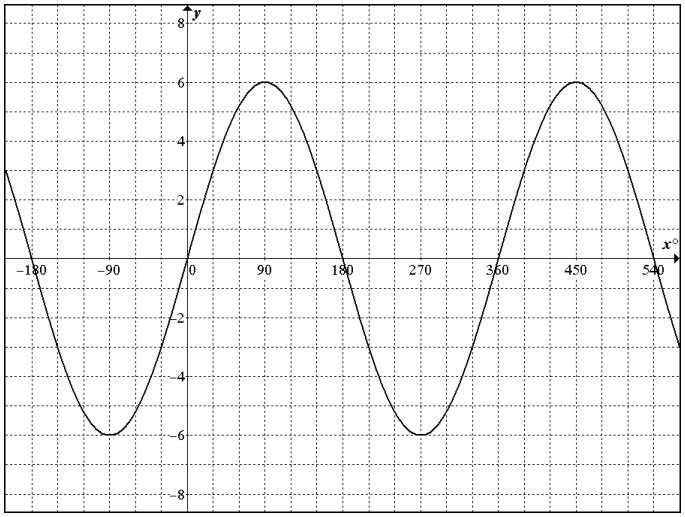
Determining the Equation of a Sinusoidal Function

$$f(x) = a\sin[k(x-d)] + c \text{ and } f(x) = a\cos[k(x-d)] + c$$

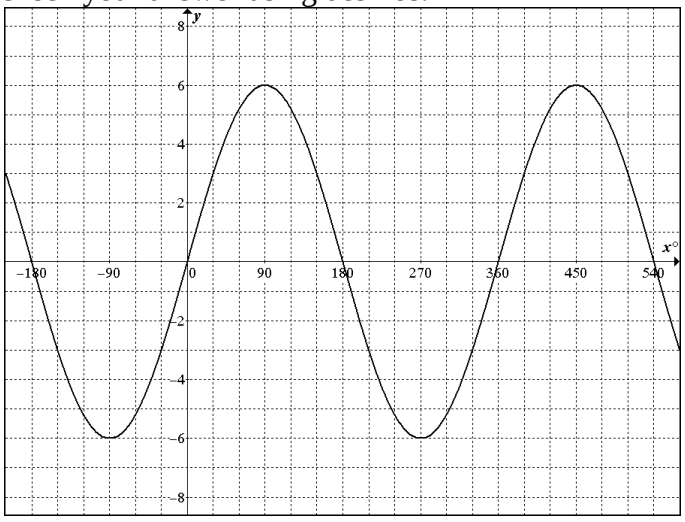
Case 1: SINE EQUATION

The function below can be considered as a **sine** function. Determine the equation of the function, and then check your answer using desmos. (Note: You need to choose degrees on Desmos. Just click)

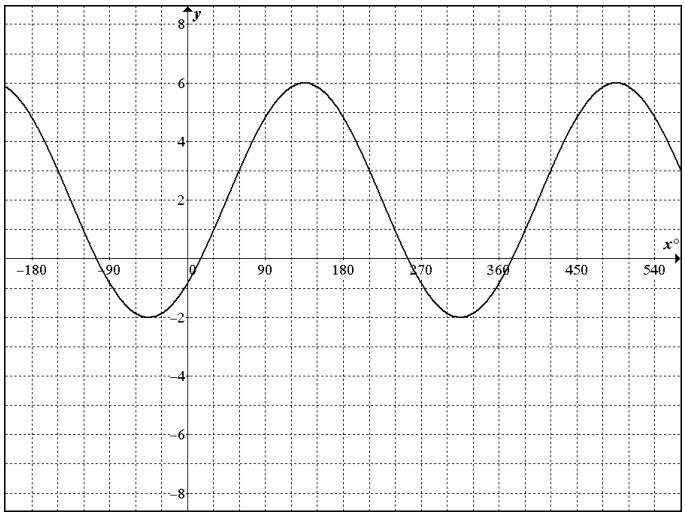


Case 2: COSINE EQUATION

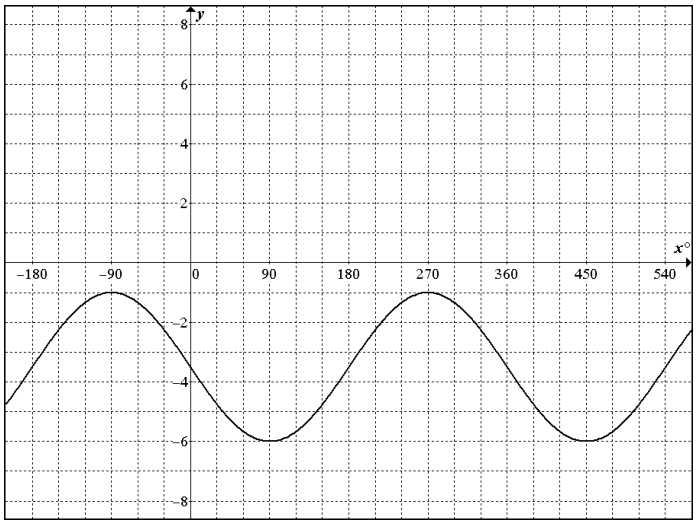
The function below can be considered as a **cosine** function. Determine the equation of the function and then check your answer using desmos.



Ex1: Write **two** equations to represent each function.



Ex2: Write **two** equations to represent each function.



CHALLENGE: A nail located on the circumference of a water wheel is moving as the current pushes on the wheel. The height of the nail in terms of time can be modeled by the graph shown. **Determine the equation** of a sinusoidal function from its graph.