Use a graphing calculator to explore the characteristics of $y = a \sin x$

Use the following WINDOW: $x : [0, 2\pi]$ $y : [-3, 3]$

Make sure your calculator is in RADIAN MODE

Part 1 Graph of $y = a \sin x$

Graph $Y_1 = \sin x$. Then graph in Y_2 each of the following, but one at a time. Describe how the new graph is different from $y = \sin x$.

1. Graph $Y_2 = 3 \sin x$ 2. Graph $Y_2 = 2 \sin x$

3. Graph $Y_2 = \frac{1}{2} \sin x$ 4. Graph $Y_2 = -3 \sin x$

Describe how the value of a affects the graph of $y = a \sin x$.

Part 2 Graph of $y = \sin bx$ Use the same WINDOW as Part 1.

Graph the following equations one at a time in Y_1 then find the period.

1. $Y_1 = \sin x$ Period=   2. $Y_1 = \sin 2x$ Period=

3. $Y_1 = \sin(4x)$ Period=   4. $Y_1 = \sin\left(\frac{x}{2}\right)$ Period=

Describe how the value of b affects the period of $y = \sin bx$

Part 3 Without graphing find the amplitude and period for each Sine Function:

1. $y = 7 \sin 5x$ 2. $y = -4 \sin \frac{x}{3}$

Amplitude=   Amplitude=

Period=   Period=

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