

You probably made a mistake with the calculation of the period. The amplitude of this graph and  $y = 4\cos\left(\frac{1}{2}x\right)$  is 4. However, this graph has 4 cycles in the interval  $[0, 4\pi]$ , so it has a period of  $\pi$ .

But  $y = 4\cos\left(\frac{1}{2}x\right)$  has a period of  $\frac{2\pi}{\frac{1}{2}} = \frac{2\pi}{1} \cdot \frac{2}{1} = 4\pi$ .