Lesson 6.6: Modeling

Amplitude: The distance from the midline to the maximum $\left(\frac{max-min}{2}\right)$ or y-distortion

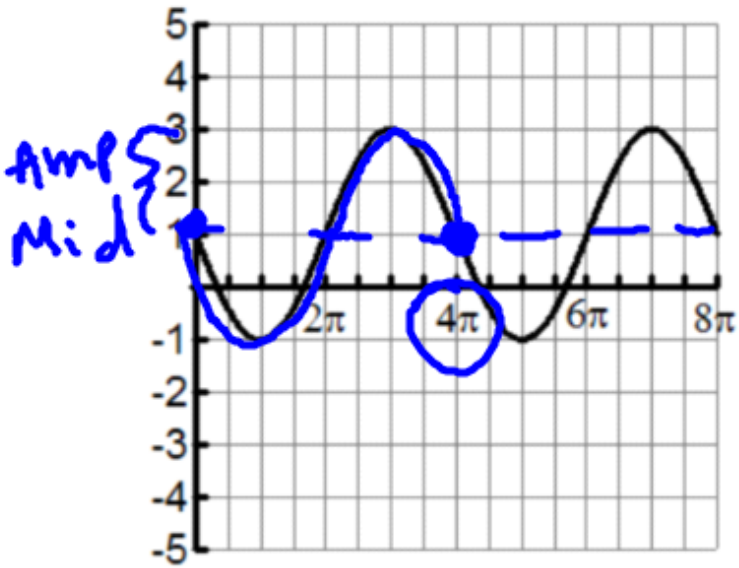
$$Period = \frac{2\pi}{x - distortion}$$

$$x - distortion = \frac{2\pi}{Period}$$

To Write an Equation:

1. Find the midline (vertical shift)
2. Find the amplitude (y-distortion)
3. Find the Period (x-distortion)
4. Starting point on the y-axis (sine/cosine)
5. The graph's trend (sign of the y-distortion)

Write the Equation

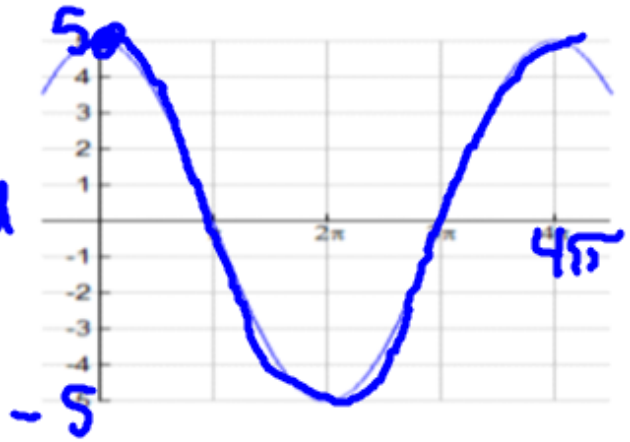


$$\boxed{y = -2\sin\left(\frac{1}{2}x\right) + 1}$$

$$\frac{2\pi}{4\pi}$$

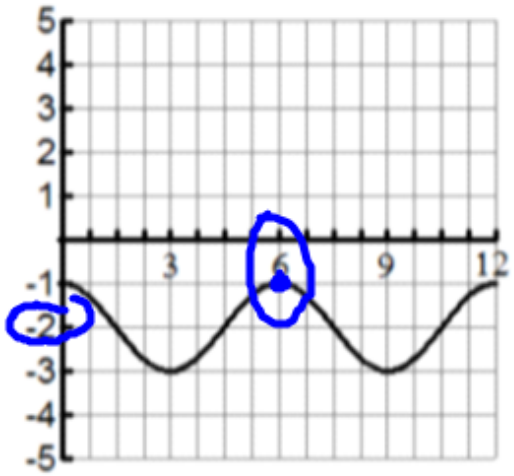
Write the Equation

19.d



$$y = 5\cos\left(\frac{\frac{1}{2}x}{\frac{2\pi}{4\pi}}\right)$$

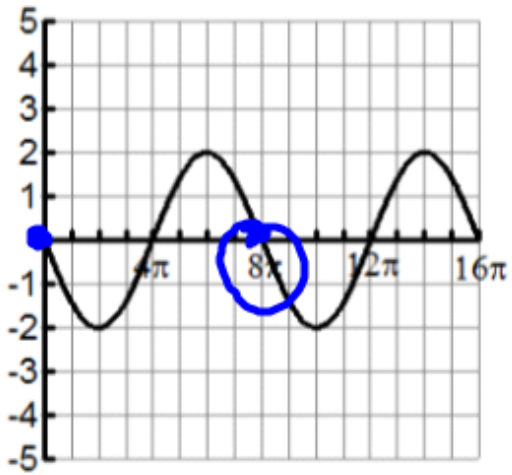
Write the Equation



$$\boxed{y = \cos\left(\frac{\pi}{3}x\right) - 2}$$

$$\frac{2\pi}{6}$$

Write the Equation



$$\boxed{y = -2\sin\left(\frac{1}{4}x\right)}$$

$$\frac{2\pi}{8\pi}$$

The London Eye - London, England

- 443 Feet Tall
- 394 Feet wide
- 2 revolutions per hour

49ft.

radius: $\frac{394}{2} = \boxed{197}$

$$y = -197\cos\left(\underbrace{\frac{\pi}{15}}_{\frac{2\pi}{30}}x\right) + 246$$