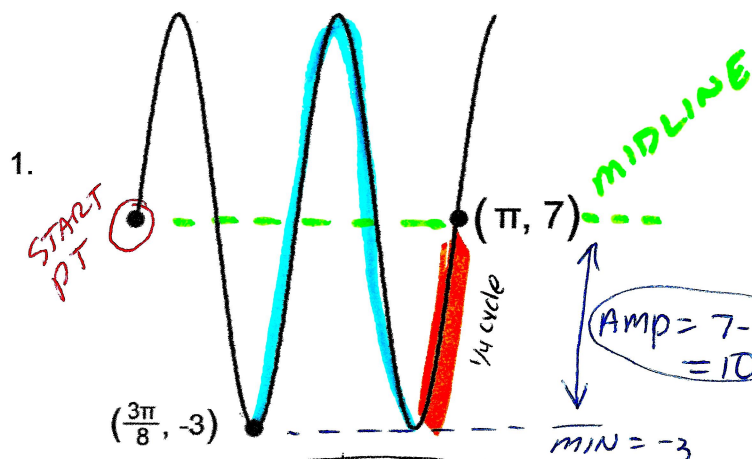


Alg 2 Weekly Review: 5/11 to 5/14

Friday, May 15, 2020

Answers

For 1 and 2 find the amplitude, equation of the midline and period then write the equation of each graph in the form $y = a \sin bx + k$



EQ: $y = 10 \sin 4x + 7$

Amplitude: $\text{midline} - \text{min}$

Amp = 10

since graph starts on midline and goes up a is pos

$a = +10$

Eq of Midline:

$y = 7$

$k = 7$

Period:

TOTAL WIDTH = $\pi - \frac{3\pi}{8} = \frac{8\pi}{8} - \frac{3\pi}{8} = \frac{5\pi}{8}$

cycles = $1\frac{1}{4} = \frac{5}{4}$

period = $\frac{\frac{5\pi}{8}}{\frac{5}{4}} = \frac{5\pi}{8} \cdot \frac{4}{5} = \frac{\pi}{2}$

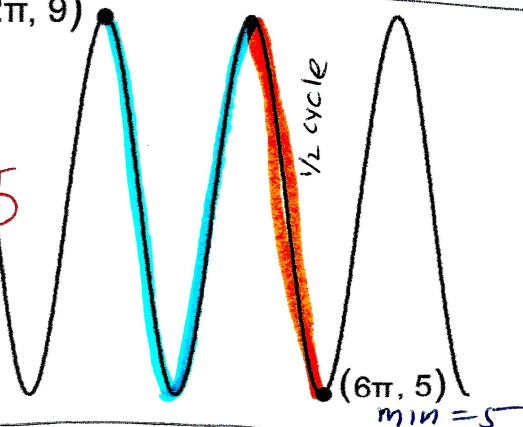
$b = \frac{2\pi}{\text{period}} = \frac{2\pi}{\pi/2} = 2\pi \cdot \frac{2}{\pi}$

$b = 4$

max = 9 $(2\pi, 9)$

2.

START PT



EQ:

$y = -2 \sin \frac{3x}{4} + 7$

Amplitude:

$= \frac{\text{max} - \text{min}}{2}$

$= \frac{9 - 5}{2} = \frac{4}{2}$

Amp = 2

since graph starts on midline & goes down a is NEG

$a = -2$

Eq of Midline:

$y = \frac{\text{max} + \text{min}}{2}$

$= \frac{9 + 5}{2} = \frac{14}{2}$

$y = 7$

$k = 7$

Period:

TOTAL WIDTH = $6\pi - 2\pi = 4\pi$

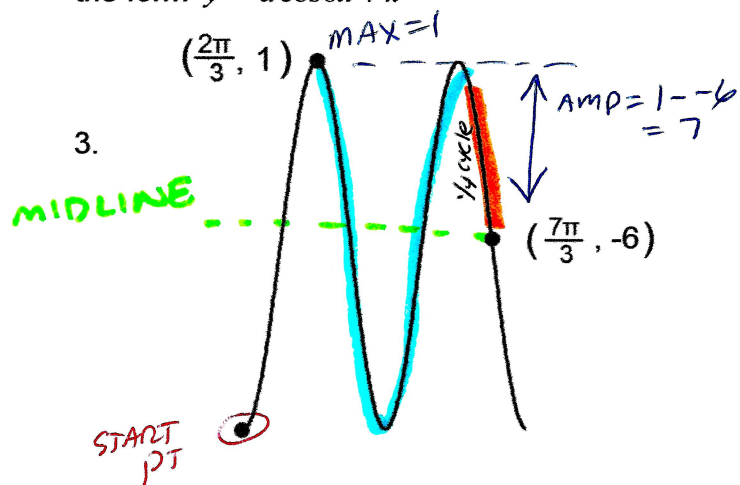
cycles = $1\frac{1}{2} = \frac{3}{2}$

period = $\frac{4\pi}{\frac{3}{2}} = 4\pi \cdot \frac{2}{3} = \frac{8\pi}{3}$

$b = \frac{2\pi}{\text{period}} = \frac{2\pi}{8\pi/3} = 2\pi \cdot \frac{3}{8\pi} = \frac{3}{4}$

$b = 3/4$

For 3 and 4 find the amplitude, equation of the midline and period then write the equation of each graph in the form $y = a \cos bx + k$



EQ:

$$y = -7 \cos \frac{3x}{2} - 6$$

Amplitude:
max - midline
 $\boxed{\text{amp} = 7}$
since graph starts at a min
 a is NEG
 $\boxed{a = -7}$

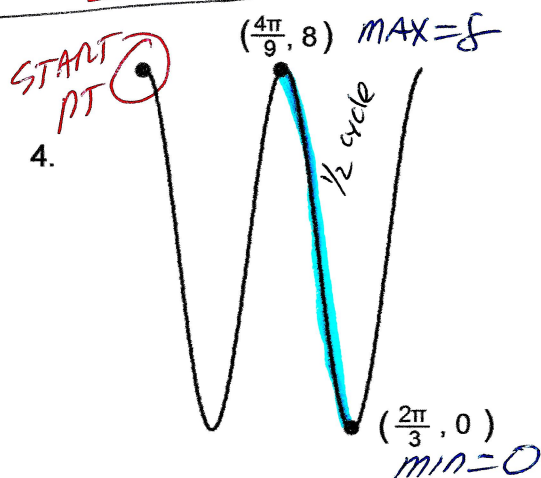
Eq of Midline:

$$y = -6$$

↓

$$\boxed{k = -6}$$

Period: TOTAL WIDTH = $\frac{7\pi}{3} - \frac{2\pi}{3} = \frac{5\pi}{3}$
cycles = $1\frac{1}{4} = \frac{5}{4}$
period = $\frac{\frac{5\pi}{3}}{\frac{5}{4}} = \frac{5\pi}{3} \cdot \frac{4}{5} = \frac{4\pi}{3}$
 $b = \frac{2\pi}{\text{period}} = \frac{2\pi}{\frac{4\pi}{3}} = 2\pi \cdot \frac{3}{4\pi} = \frac{3}{2}$



EQ:

$$y = 4 \cos \frac{9x}{2} + 4$$

Amplitude:

$$\frac{\text{max} - \text{min}}{2}$$

$$= \frac{8 - 0}{2} = 4$$

$\boxed{\text{Amp} = 4}$

since graph starts at a max a is pos

$$\boxed{a = +4}$$

Eq of Midline:

$$y = \frac{\text{max} + \text{min}}{2} = \frac{8 + 0}{2}$$

$$\boxed{y = 4}$$

↓

$$\boxed{k = 4}$$

Period: TOTAL WIDTH = $\frac{2\pi}{3} - \frac{4\pi}{9} = \frac{6\pi}{9} - \frac{4\pi}{9} = \frac{2\pi}{9}$
cycles = $\frac{1}{2}$
period = $\frac{\frac{2\pi}{9}}{\frac{1}{2}} = \frac{2\pi}{9} \cdot \frac{2}{1} = \frac{4\pi}{9}$

$$b = \frac{2\pi}{\text{period}} = \frac{2\pi}{\frac{4\pi}{9}} = 2\pi \cdot \frac{9}{4\pi}$$

$$\boxed{b = \frac{9}{2}}$$