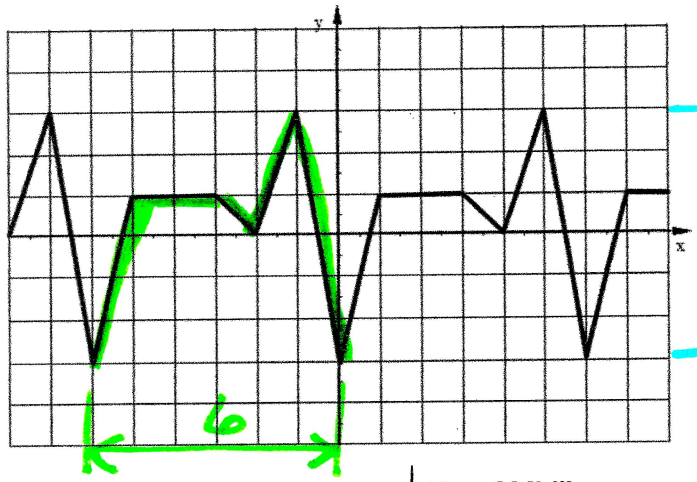
Alg 2 Weekly Review: 5/4 to 5/7 Friday, May 8, 2020 SOLUTIONS

1. Find the Amplitude, Equation of the Midline, and the Period of the periodic function shown below.



max = 3

min = −3

Amplitude: $\frac{\text{max}-\text{min}}{2} = \frac{3-(-3)}{2} = \frac{6}{2} = 3$

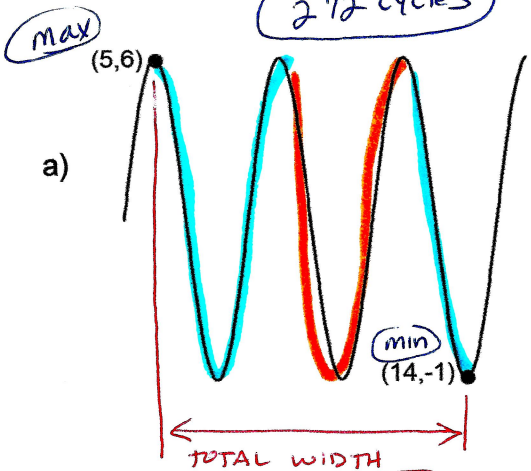
Eq of Midline: $y = \frac{\text{max}+\text{min}}{2} = \frac{3+(-3)}{2} = \frac{0}{2} = 0$; $y = 0$

Period: 6

WIDTH of 1 cycle = 6

2. Find the Amplitude, Equation, and Period for each Sine function. Give Period as a fraction in reduced form and in terms of π where applicable.

a)



max = 6 min = −1

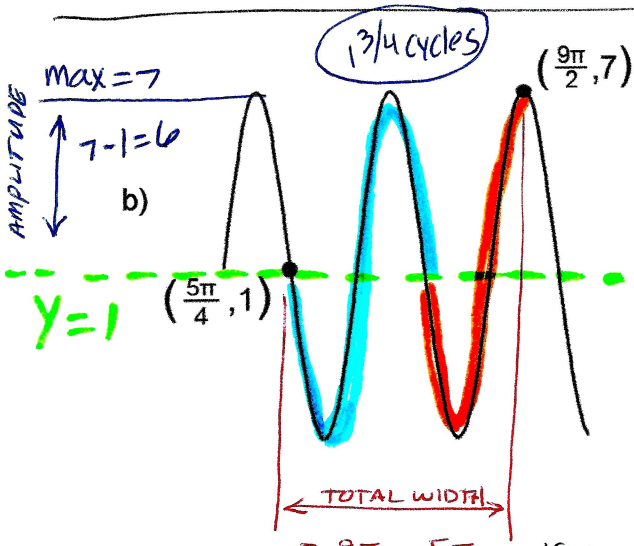
Amplitude: $\frac{\text{max}-\text{min}}{2} = \frac{6-(-1)}{2} = \frac{7}{2} = 3.5$

Eq of Midline: $y = \frac{\text{max}+\text{min}}{2} = \frac{6+(-1)}{2} = \frac{5}{2} = 2.5$; $y = 2.5$

Period: $= \frac{\text{TOTAL WIDTH}}{\#\text{ cycles}} = \frac{9}{2\frac{1}{2}} = \frac{9}{\frac{5}{2}} = 9 \cdot \frac{2}{5}$

Period $= \frac{18}{5}$

b)



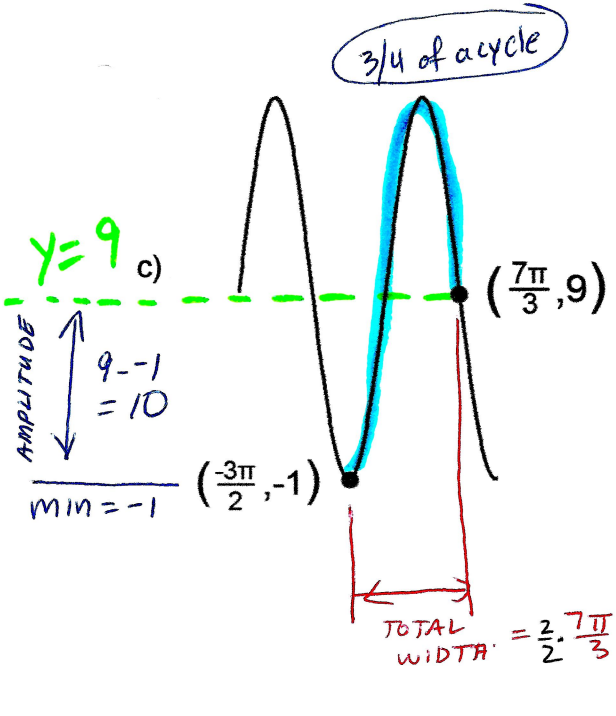
Amplitude: $7 - 1 = 6$

Eq of Midline: $y = 1$

Period: $= \frac{\text{TOTAL WIDTH}}{\#\text{ cycles}} = \frac{\frac{13\pi}{4}}{1\frac{3}{4}} = \frac{\frac{13\pi}{4}}{\frac{7}{4}} = \frac{13\pi}{4} \cdot \frac{4}{7}$

Period $= \frac{13\pi}{7}$

TOTAL WIDTH $= \frac{9\pi}{2} - \frac{5\pi}{4} = \frac{18\pi}{4} - \frac{5\pi}{4} = \frac{13\pi}{4}$



Amplitude: $9-(-1)=10$

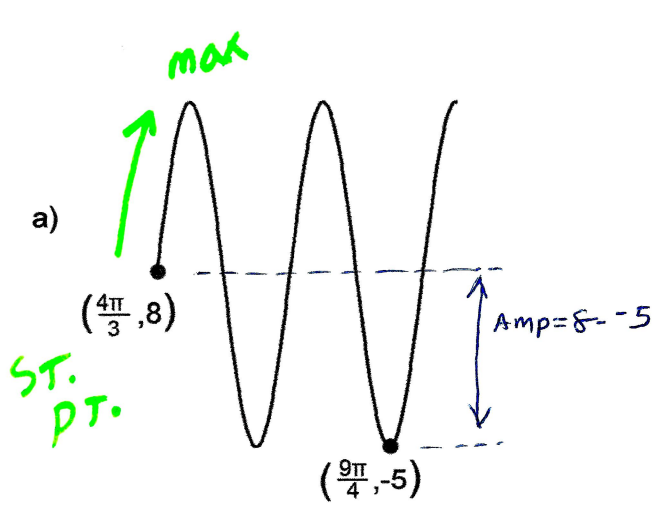
Eq of Midline: $y=9$

Period: $= \frac{\text{TOTAL WIDTH}}{\#\text{cycles}} = \frac{\frac{23\pi}{6}}{\frac{3}{4}} = \frac{23\pi}{6}\cdot\frac{4}{3}$

Period $= \frac{46\pi}{9}$

TOTAL WIDTH $= \frac{2}{2}\cdot\frac{7\pi}{3} - \frac{-3\pi}{2}\cdot\frac{3}{3} = \frac{14\pi}{6}+\frac{9\pi}{6} = \frac{23\pi}{6}$

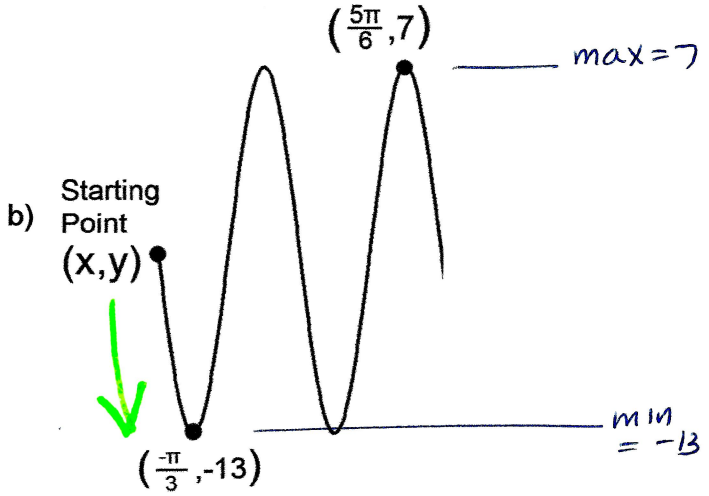
3. Use the given graph of a Sine function to determine the value of a in the equation $y = a\sin x$.



$a = 13$

Amplitude $= 8-(-5)=13$

since graph starts on the mid line and goes up to a max it's not upside down and a is positive.



$a = -10$

amplitude $= \frac{\text{max}-\text{min}}{2} = \frac{7--13}{2} = \frac{20}{2} = 10$

since graph starts on the midline and goes DOWN it is upside down and a is Negative.