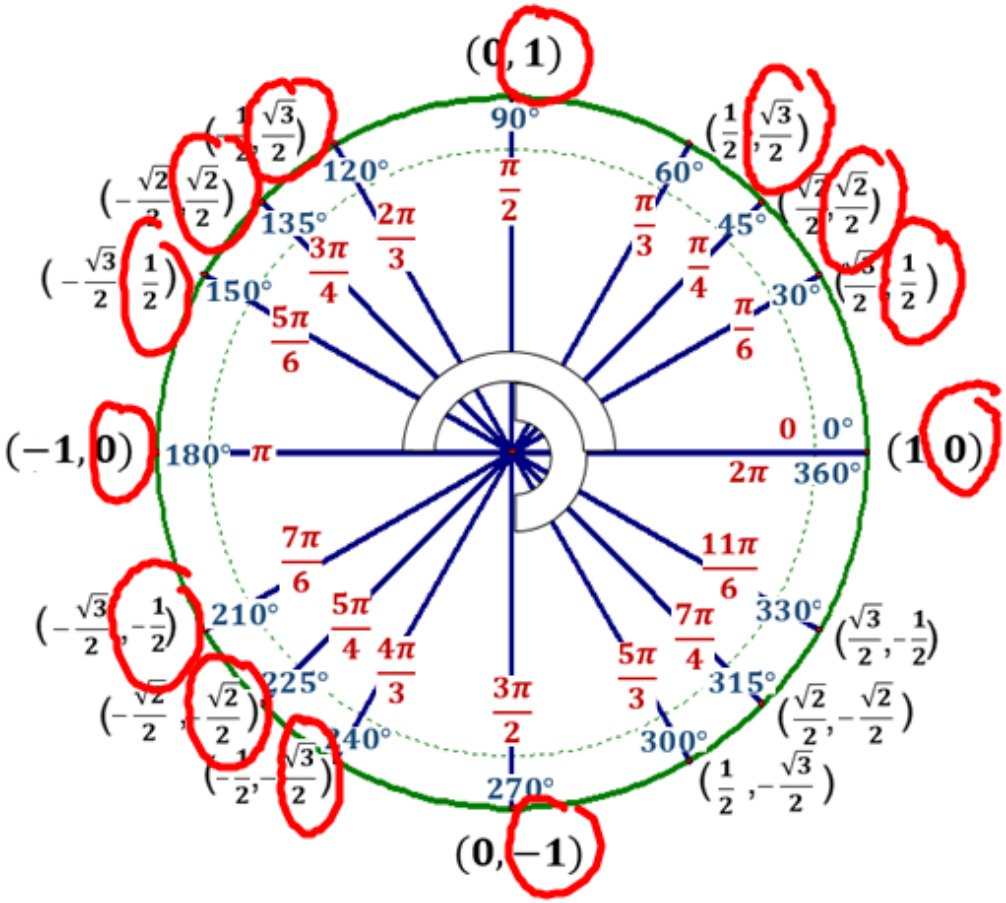
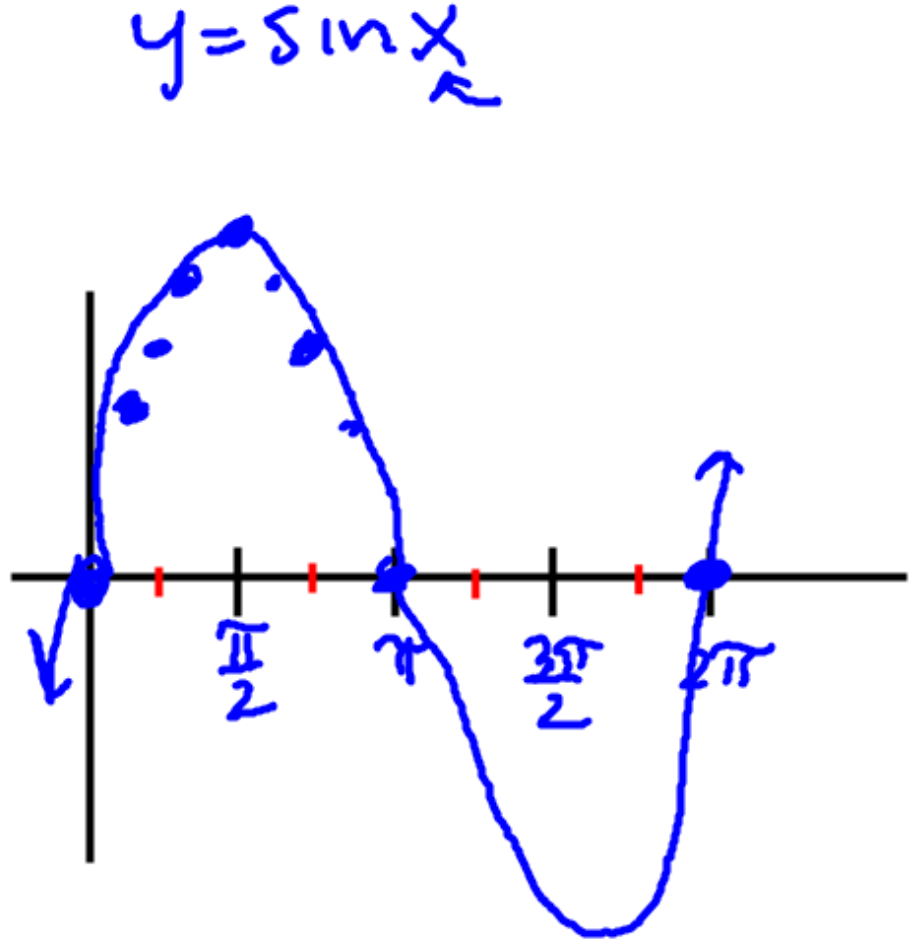
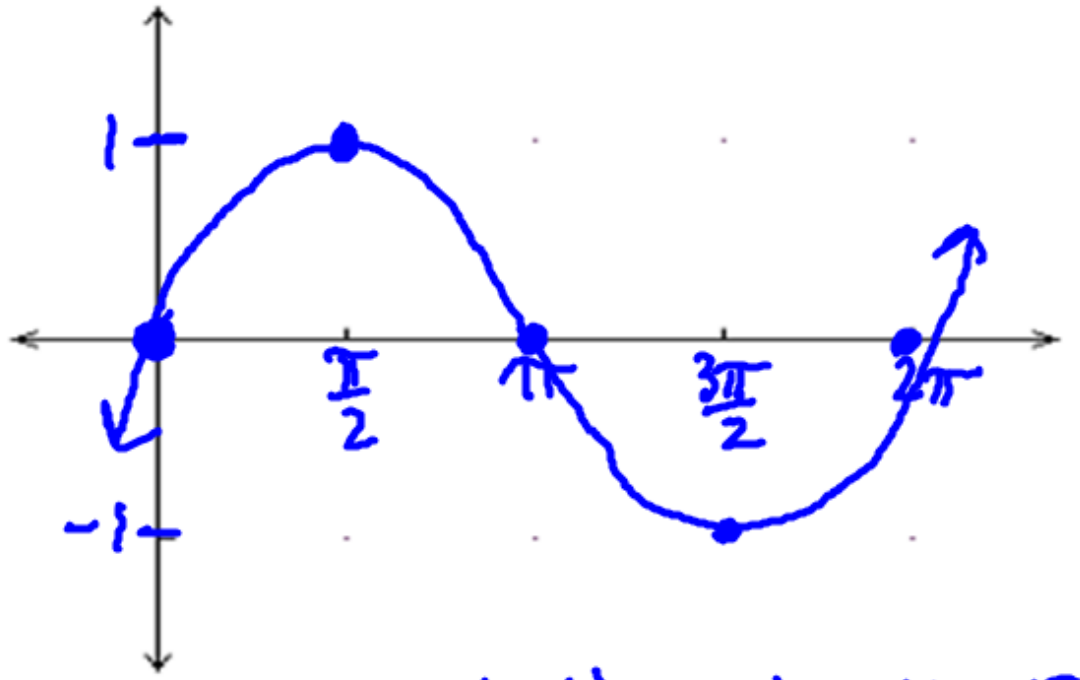
Lesson 12.1: Graphing Sine





Sine

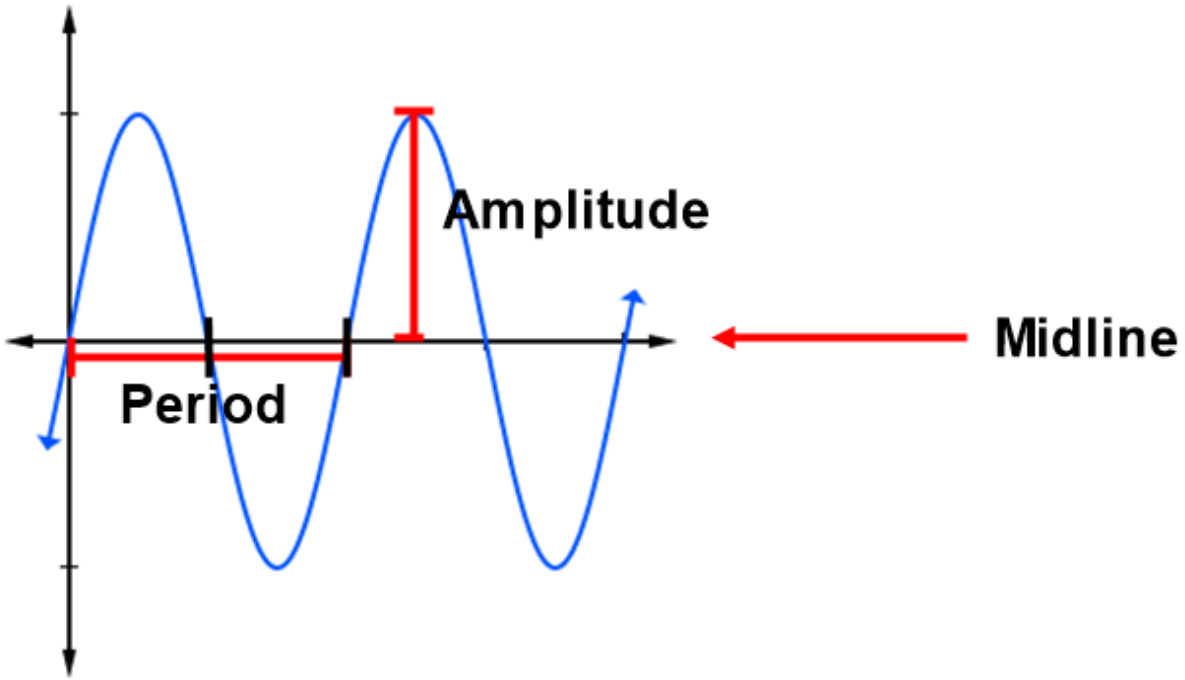
$$f(x) = \sin x$$



Midline: $y = 0$

Amplitude: 1

Period: 2π



Midline: Middle of the Wave
Amplitude: Distance from the Midline to the Maximum
Period: the length of one complete cycle

$$\text{Frequency} = \frac{1}{\text{Period}}$$

$$y = a \cdot \sin(bx) + k$$

$|a|$ = amplitude

b = number of cycles between 0 and 2π

$$\text{Period} = \frac{2\pi}{b}$$

k = midline

Determine the midline, amplitude, period and frequency.

(M) (A) (P) (F)

(A) $y = 2\sin 3x$

M: 0

A: 2

P: $\frac{2\pi}{3}$

F: $\frac{3}{2\pi}$

(B) $y = -3\sin\frac{1}{4}x - 1$

M: -1

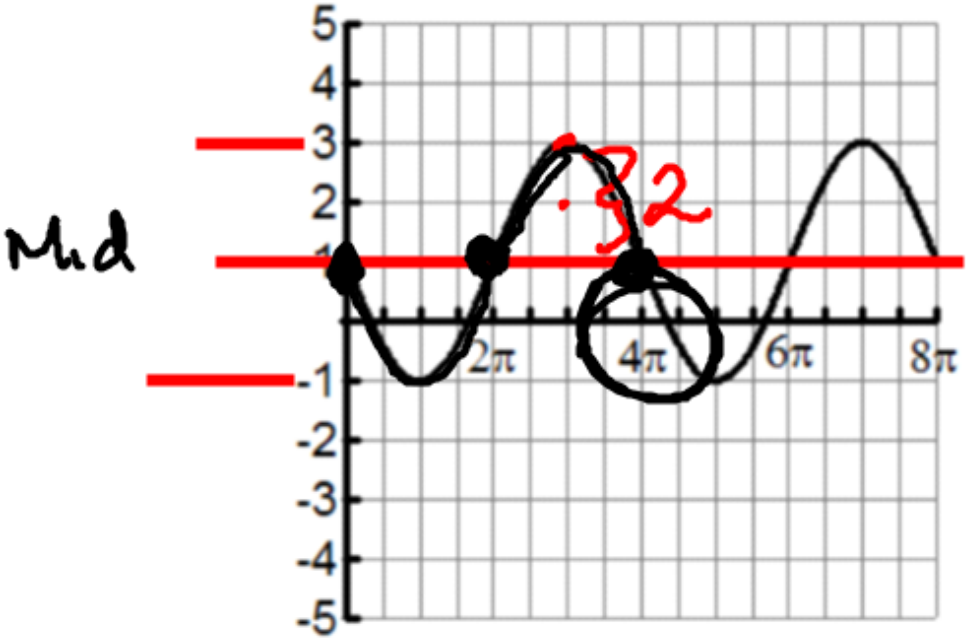
A: $|-3| = 3$

P: $\frac{2\pi}{1/4} = 2\pi \cdot 4 = 8\pi$

F: $\frac{1}{8\pi}$

$y = a \cdot \sin(bx) + k$

Determine the midline, amplitude, period and frequency.



M: $y = 1$

A: 2

P: 4π

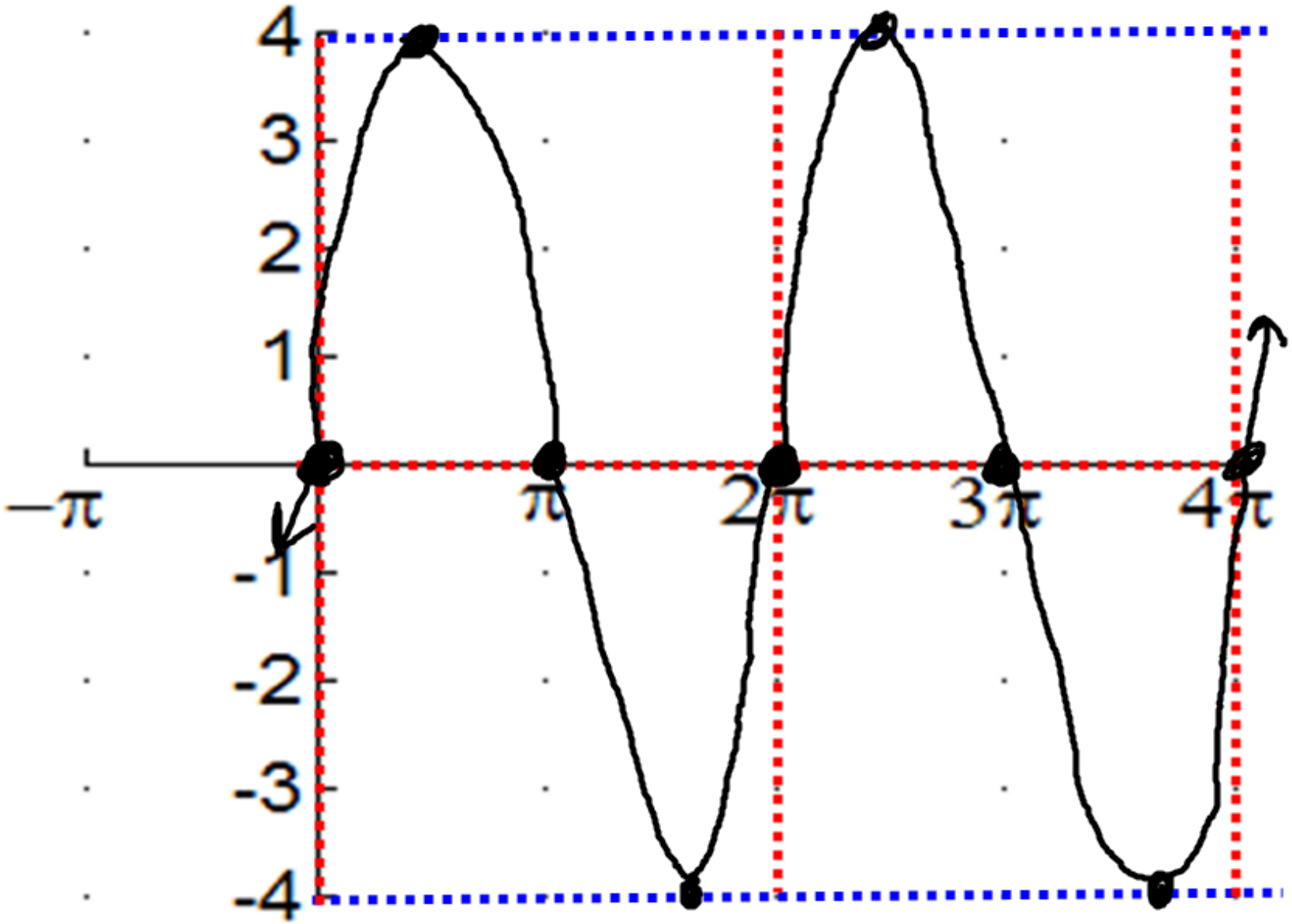
F: $\frac{1}{4\pi}$

$y = -2\sin$

Graph the following:

$y = 4\sin x$

M: 0 A: 4 P: $\frac{2\pi}{1} = 2\pi$

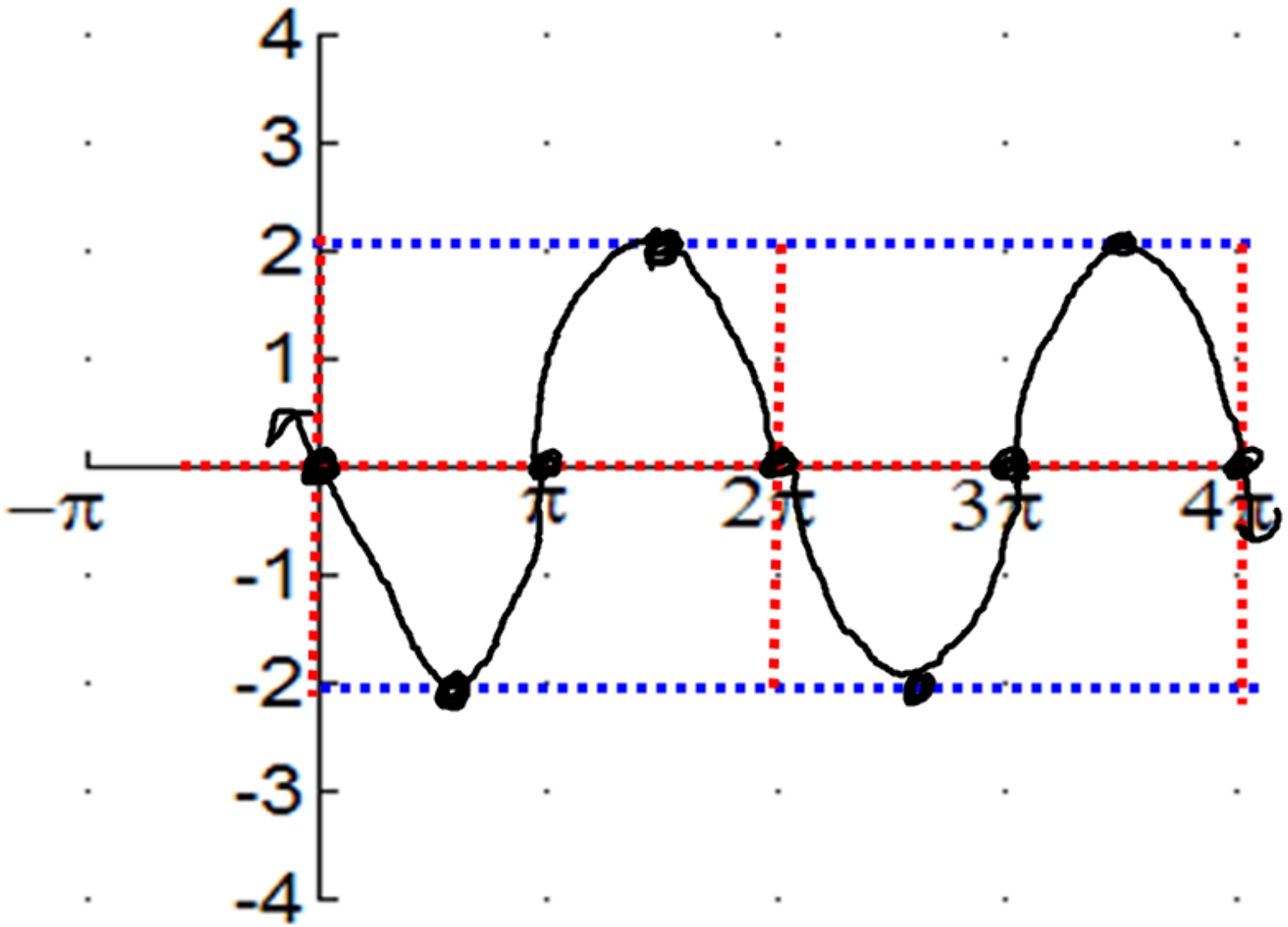


Graph the following:

$y = -2\sin x$

Down 1st

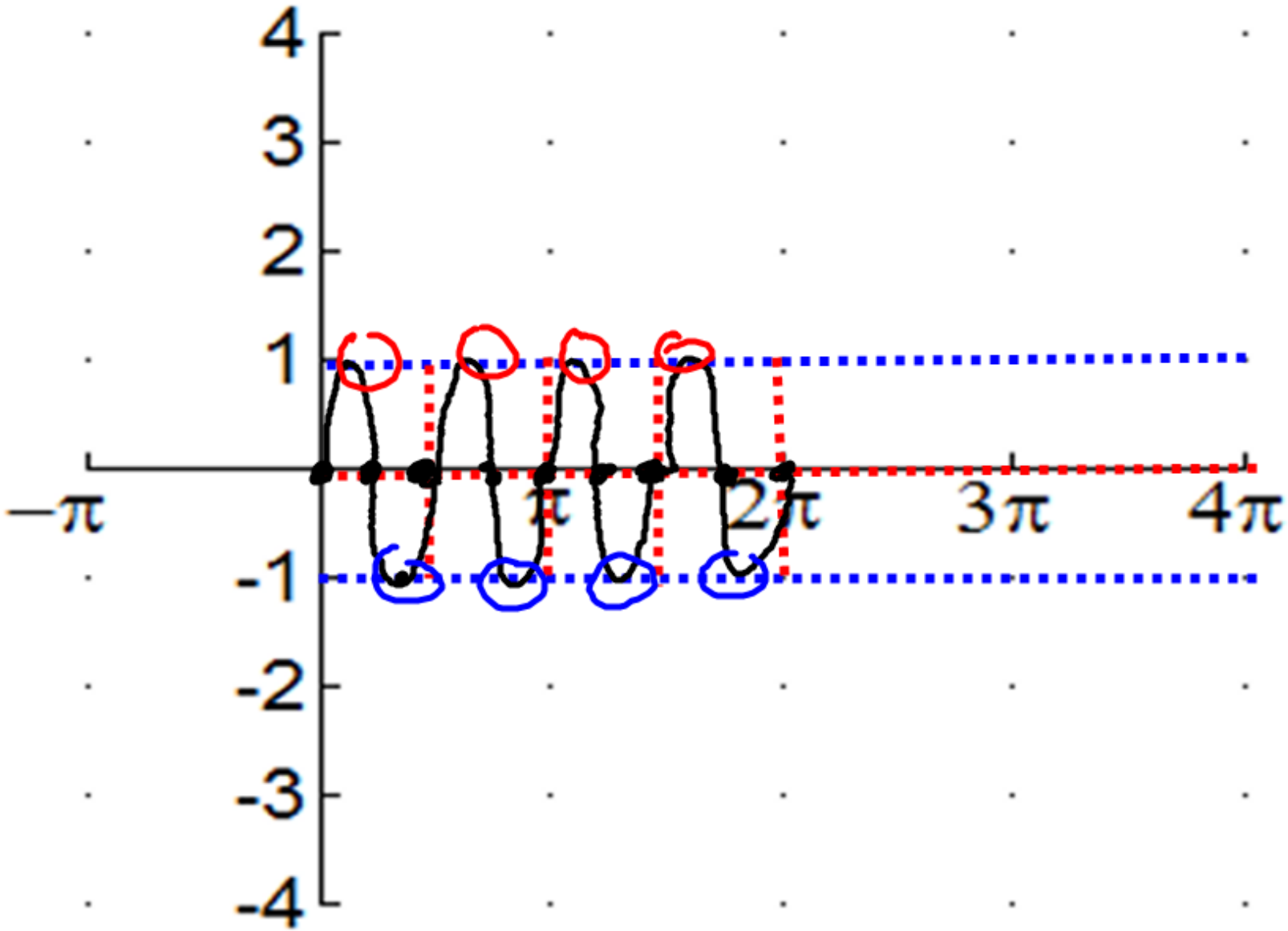
M: 0 A: 2 P: $\frac{2\pi}{1} = 2\pi$



Graph the following:

$y = |\sin 4x|$

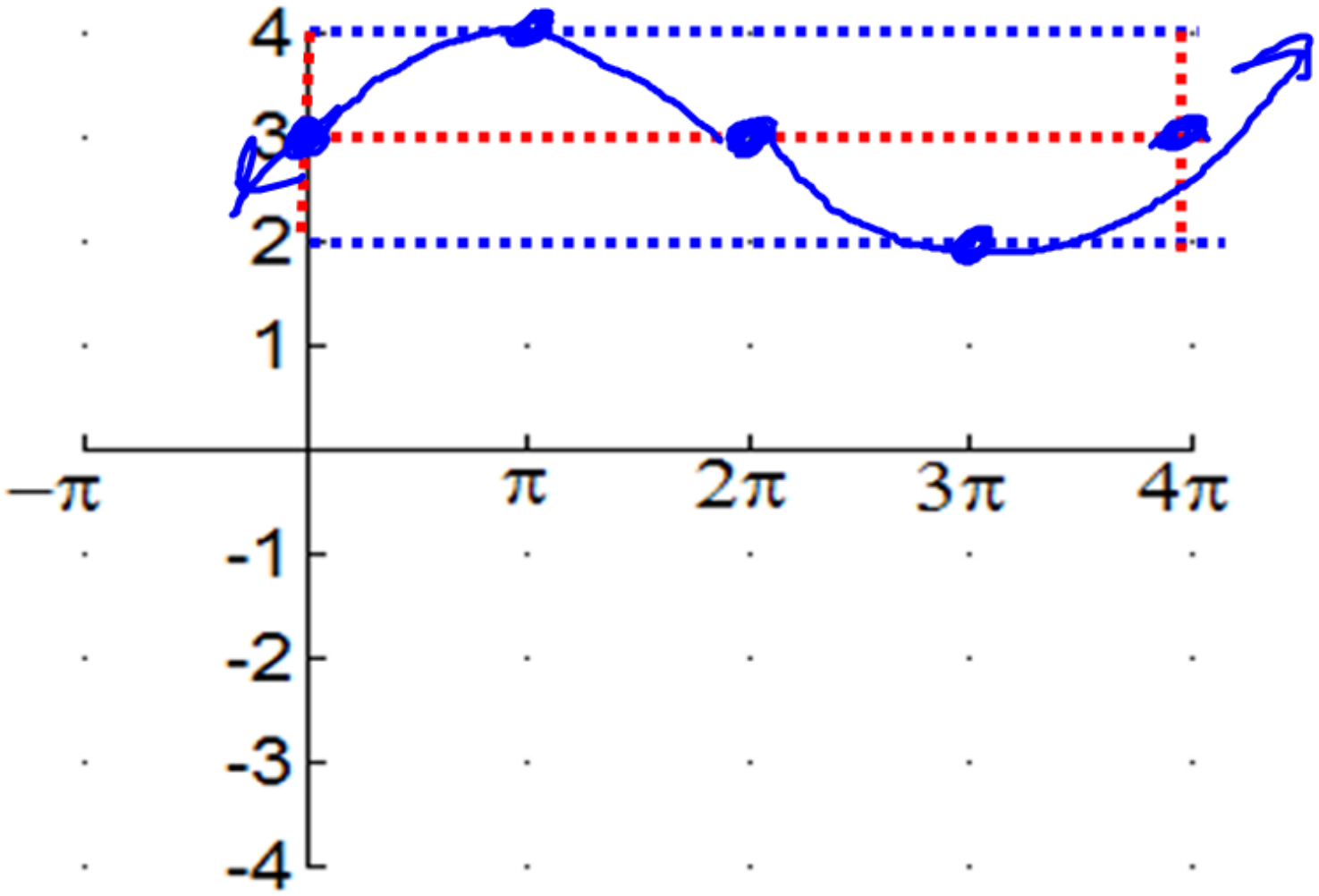
M: 0 A: 1 P: $\frac{2\pi}{4} = \frac{\pi}{2}$



Graph the following:

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

M: 3 A: 1 P: $\frac{2\pi}{\frac{1}{2}} = 2\pi \cdot 2 = 4\pi$



Graph the following:

$$y = -\sin 3x + 1$$

Down 1st

M: 1 A: 1

P: $\frac{2\pi}{3}$