

Today's Learning Goal(s):

By the end of the class, I will be:

- a) ready for the unit summative on sinusoidal functions.

Review Ideas

Periodic Behaviour vs. Sinusoidal Behaviour

The Sine function: $f(x) = a \sin(x - c) + d$

a ---> vertical stretch or compression
 ---> if $a > 1$ ---> if $0 < a < 1$
 ---> reflection in the x -axis if $a < 0$

c ---> horizontal translation (left or right)

d ---> vertical translation (up or down)

Ex: $f(x) = -6\sin(x + 150^\circ) - 7$

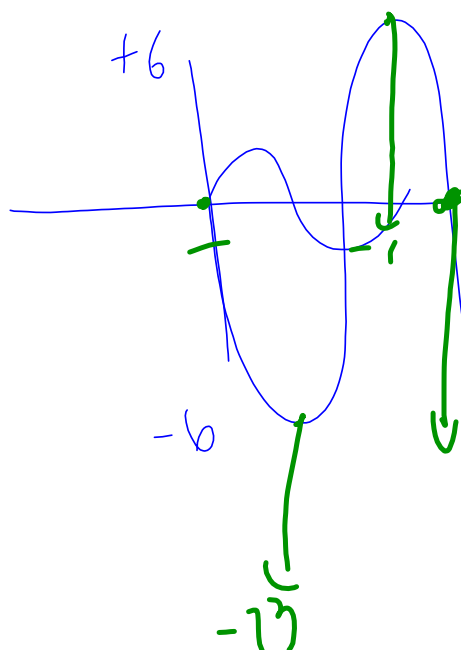
Equation of the axis: $y = -7$

Amplitude: 6

Period: 360°

Domain: $\{x \in \mathbb{R}\}$

Range: $\{y \in \mathbb{R} \mid -13 \leq y \leq -1\}$



MCF 3MI

6.R Sinusoidal Functions Review

$$f(x) = a \sin(x - c) + d$$

Date: May 7/19

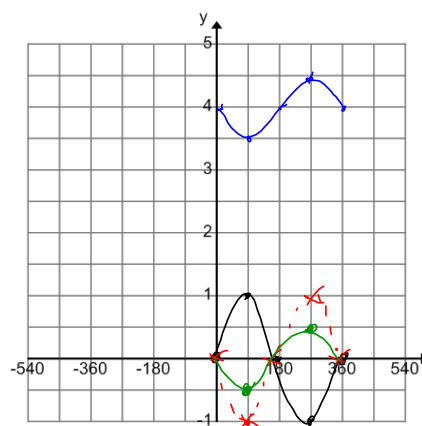
The following questions are taken from p. 379 of the textbook.

9. The function $f(x) = \sin(x)$ undergoes a reflection in the x -axis, a vertical compression by a factor of 0.5, and a vertical translation of 4 units.

- a) What is the equation of the resulting function?

$$f(x) = -0.5 \sin x + 4$$

- b) Sketch the resulting function on the graph provided



12. The height of a Ferris wheel is modeled by the function,

$h(\theta) = 6\sin(\theta - 45^\circ) + 7$, where $h(\theta)$ is in metres and θ is the number of degrees the wheel has rotated from the boarding position of the rider.

a) Sketch the graph of this function.

b) What is the range of the function?

$$\{h \in \mathbb{R} \mid 1 \leq h \leq 13\}$$

c) What is the amplitude of the function, and what does it represent in this situation?

$$a = 6$$

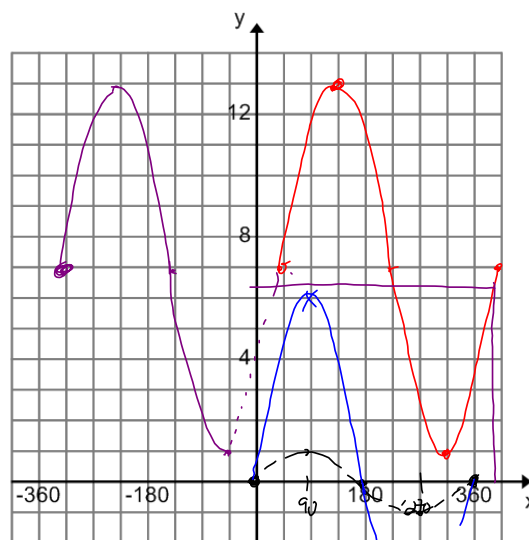
the amplitude represents the radius of 6 m. of the ferris wheel.

d) When the rider has rotated 400° (from the boarding position) how high above the ground is the rider?

$$h(400^\circ) = 6\sin(400 - 45^\circ) + 7$$

$$\approx 6.47$$

$$\approx 6.5 \text{ m}$$



Today's Homework:

p. 379 # 6 – 8, 10ace, 11ace, 12

(Note: for 11c, the sketch is incorrect in the text solution)