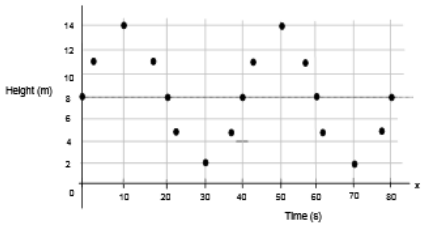
MCF3MI Huron Heights Secondary

EXAM REVIEW 6

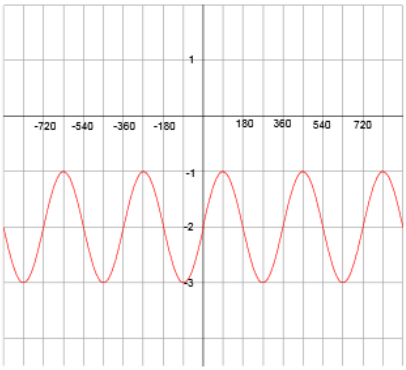
CHAPTER 6: Sinusoidal Functions

1. Information about the movement of a Ferris wheel is shown below.



(a) How long does it take for the Ferris wheel to make five complete rotations?
(b) What the sinusoidal equation for the above graph.
(c) What is the height of the axle supporting the Ferric wheel?
(d) Calculate the speed at which the wheel is rotating.

2. Given the following graph, complete the given analysis.



Amplitude: _____

Period: _____

Range: _____

Number of cycles from -540 to 90: _____

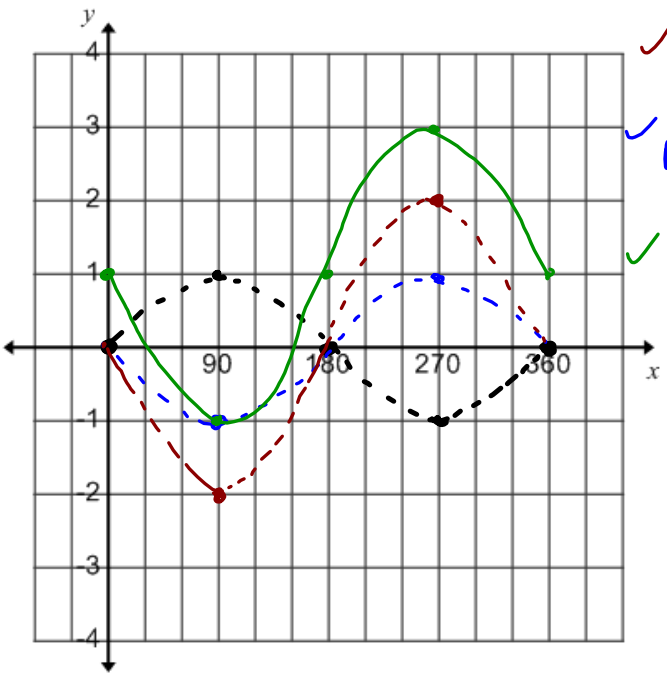
Axis: _____

3. Describe the transformation $g(x) = -2\sin x + 1$ and then sketch it.

4. What is the range for each of the following sinusoidal functions?
   (a) $f(x) = 0.5\sin x - 4$ (b) $f(x) = \sin(x - 180°)$

5. The function $f(x) = \sin x$ has been translated $60°$ to the right , vertically stretched by a factor of 3 and reflected in the x-axis. Write the new equation.

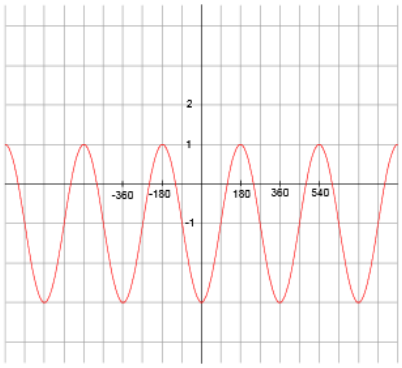
3. Describe the transformation $g(x) = -2\sin x + 1$ and then sketch it.



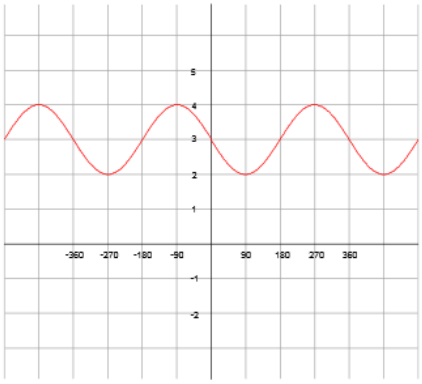
✓ V.S. by a factor of 2
✓ reflection in the x-axis
✓ V.t up 1 unit

6. Write the equation for the sinusoidal function.

(a)



(b)



7. Complete the chart below.

Sinusoidal Function	Maximum	Minimum
(a) $f(x)=3\sin x$		
(b) $f(x)=-\sin(x-45°)+6$		
(c) $f(x)=-0.25\sin x-1.5$		

8. The height of a Ferris wheel is modeled by the function $h(x)=6\sin(x-45°)+7$, where $h(x)$ is in metres and x is the number of degrees the wheel has rotated from the boarding position of a rider.

   (a) Using the graph paper provided, sketch the curve.
   (b) When the rider has rotated $400°$ from the boarding position, how high above the ground is the rider?

9. Sketch each sinusoidal function on the grid provided.
   (a) $f(x)=2\sin(x-90°)$
   (b) $f(x)=0.5\sin(x-60°)-2$

8. The height of a Ferris wheel is modeled by the function $h(x) = 6\sin(x - 45°) + 7$, where $h(x)$ is in metres and x is the number of degrees the wheel has rotated from the boarding position of a rider.

   (a) Using the graph paper provided, sketch the curve.
   (b) When the rider has rotated 400° from the boarding position, how high above the ground is the rider?

$$h(x) = 6\sin(x - 45°) + 7$$

$h(400°) = 6\sin(400 - 45°) + 7$

$= 6\sin(355°) + 7$

$\doteq 6.477$

$\doteq 6.48$ m