

## MHF4U Unit 5 Trigonometry

Section	Pages	Questions
Prereq Skills	250 - 251	#1ac, 2ac, 3ace, 4ace, 5, 6, 8(graph the function), 9(graph the function), 10, 11, 12ab, 15
5.1	258 - 259	#1ad, 2ad, 3ad, 4ad, 5bc, 6bc, 7ab, 8ab, 9, 10, 11, 12, 17
5.2	275 - 279	#1abce, 2, 3, 4, 5(don't graph), 6(don't graph), 8ab, 9ab, 10, 11, 12a, 13a, 19a
5.3	267 - 269	#7, 9a, 10, 13, 15*, 16*, 18
5.4	287 - 289	#1abe, 3ab, 5be, 7cd, 9, 10, 11, 12, 13bc, 14, 16, 17, 18, 19, 20, 22*, 26
5.5	296 - 299	#1, 3, 4abef, 6, 10, 11ab, 12
Review	300 - 301 302 - 303	#1, 2, 3, 4, 6a, 7, 8, 9, 10, 11, 12 #2-7, 9-15

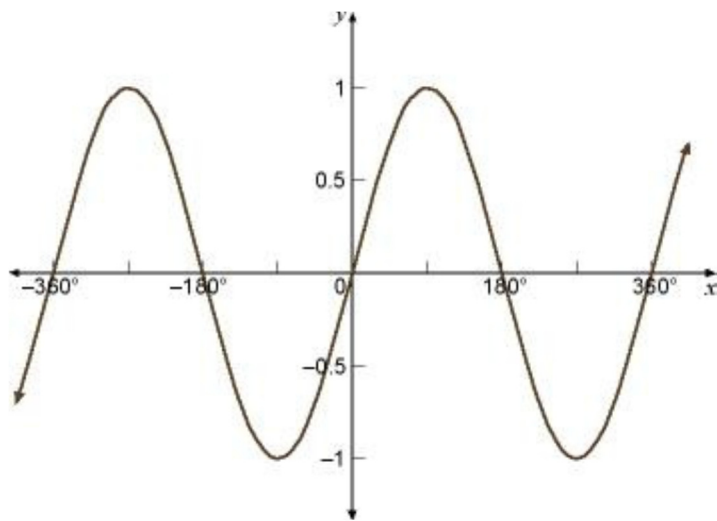
**Note: Questions with an asterisk\* are extra questions that are optional for the daily homework. However, they are potential "extended-type" questions that could be included on a unit test.**

## Section 5.0

## Prerequisite Skills

Graph of  $y = \sin x$  for  $-360^\circ \leq x \leq 360^\circ$ .

x	y
$-360^\circ$	0
$-270^\circ$	1
$-180^\circ$	0
$-90^\circ$	-1
$0^\circ$	0
$90^\circ$	1
$180^\circ$	0
$270^\circ$	-1
$360^\circ$	0

**Key Features**

Period =  $360^\circ$ ,

Max for  $y = 1$ ,

Min for  $y = -1$

Amplitude = 1,

Phase Shift =  $0^\circ$

Vertical Displacement = 0

x-intercepts:  $-360^\circ, -180^\circ, 0^\circ, 180^\circ, 360^\circ$

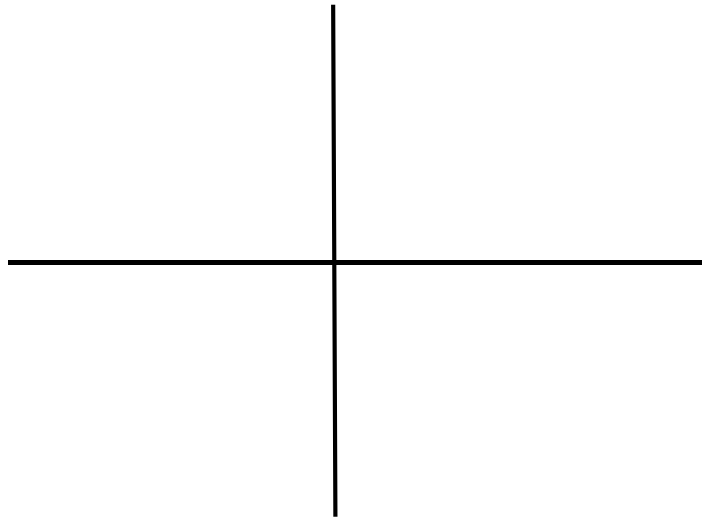
y-intercept: 0

Domain:  $\{x \in R \mid -360^\circ \leq x \leq 360^\circ\}$

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

Graph of  $y = \cos x$  for  $-360^\circ \leq x \leq 360^\circ$ .

x	y
$-360^\circ$	
$-270^\circ$	
$-180^\circ$	
$-90^\circ$	
$0^\circ$	
$90^\circ$	
$180^\circ$	
$270^\circ$	
$360^\circ$	



Period =

Max for y =

Min for y =

Amplitude =

Phase Shift =

Vertical Displacement =

x-intercepts:

y-intercept:

Domain:

Range:

## Transformations of Sinusoidal Functions

$$y = a \sin(k(\theta - d)) + c$$

$$y = a \cos(k(\theta - d)) + c$$

$a$  = amplitude (vertical stretch or compression)

$k$  = horizontal stretch or compression

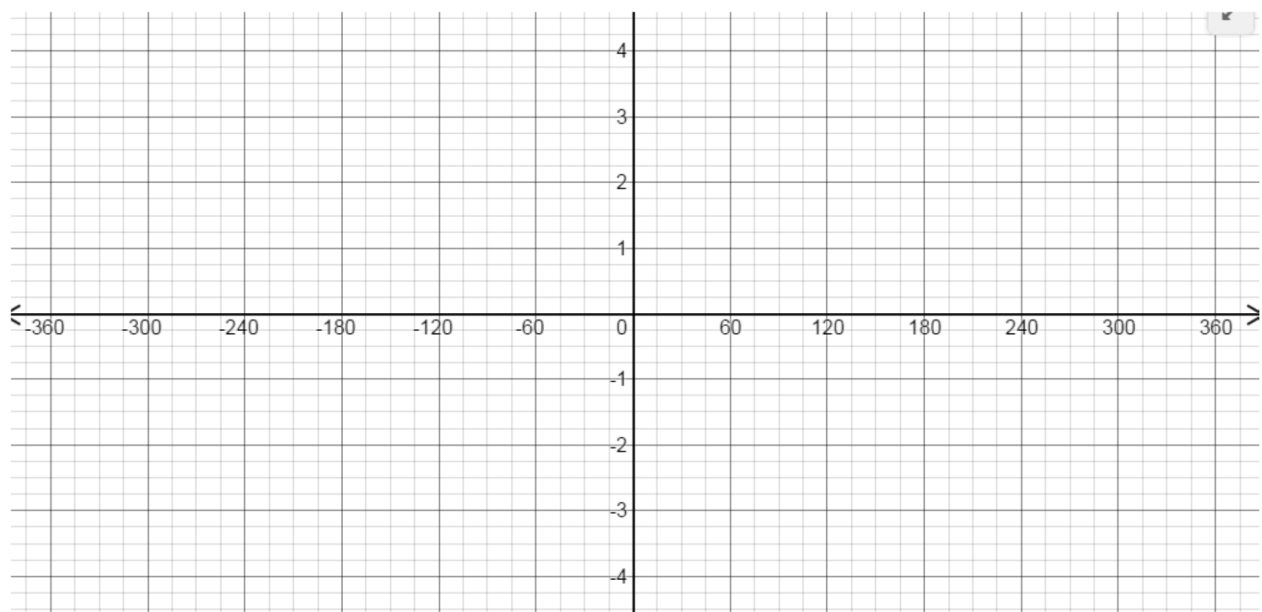
$d$  = phase shift (horizontal translation)

$c$  = vertical displacement (vertical translation)

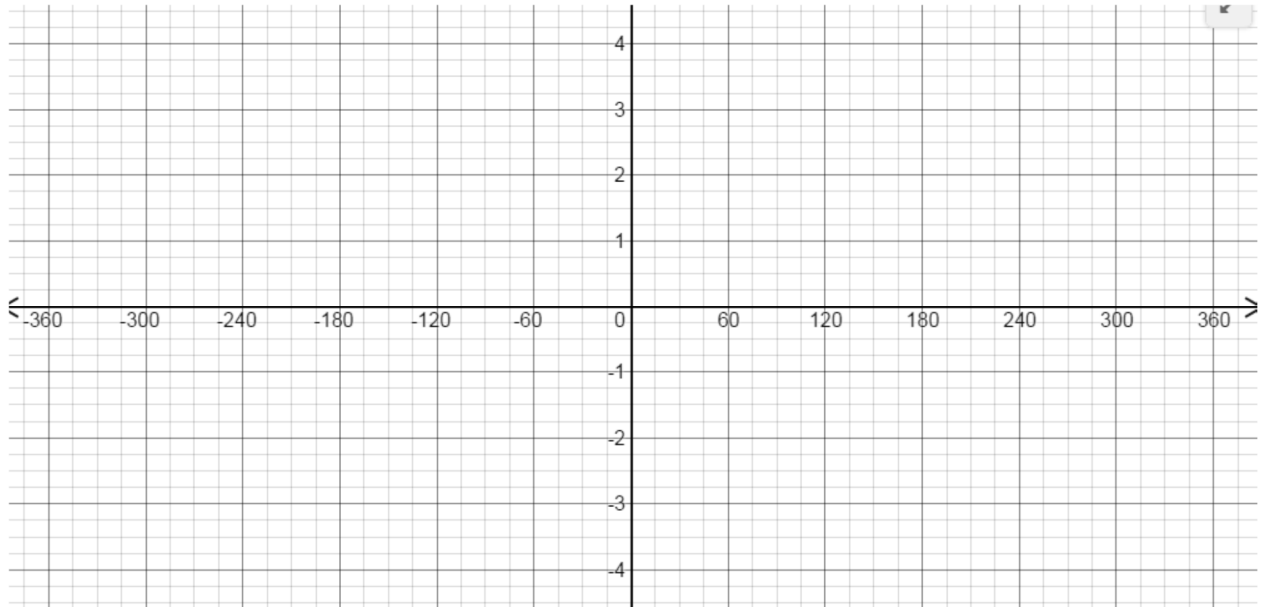
Period =  $360^\circ / k$  (time needed to complete one cycle or wavelength)

Frequency =  $1 / \text{Period}$  (number of cycles per unit of time)

Example: Describe the transformations that must be applied to the graph of  $f(x) = \sin x$  to obtain the graph  $g(x) = -0.5\sin[3(x + 150^\circ)] + 3$ . Graph the functions  $f(x)$  and  $g(x)$  on the same grid and state the domain and range.

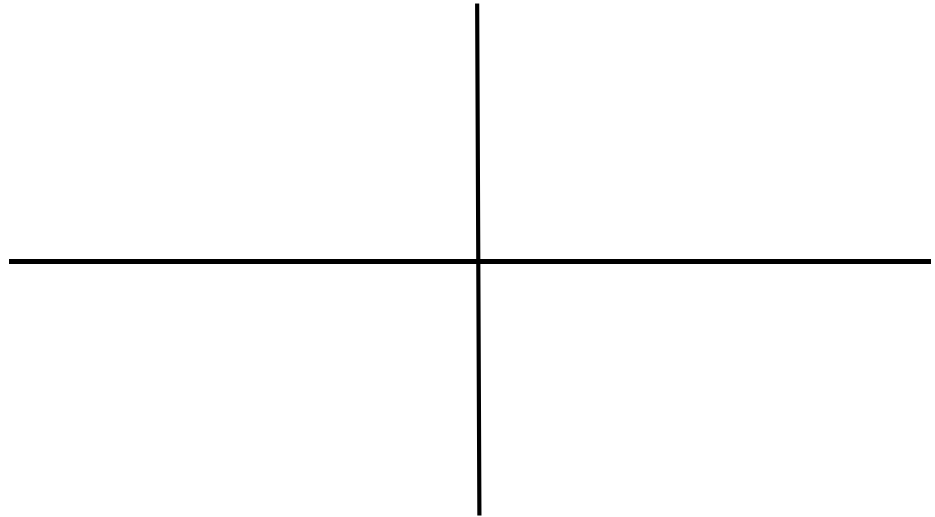


Example: Describe the transformations that must be applied to the graph of  $f(x) = \cos x$  to obtain the graph  $g(x) = 2\cos[2(x - 120^\circ)] - 2$ . Graph the functions  $f(x)$  and  $g(x)$  and state the domain and range.



Graph of  $y = \tan x$  for  $-360^\circ \leq x \leq 360^\circ$ .

x	y
-360°	
-315°	
-270°	
-225°	
-180°	
-135°	
-90°	
-45°	
0°	
45°	
90°	
135°	
180°	
225°	
270°	
315°	
360°	



**Key Features**

Period =

Max for y =

Min for y =

Amplitude =

Phase Shift =

Vertical Displacement =

x-intercepts:

y-intercept:

Domain:

Range: