Date: _____

Did you print today's lesson in advance?

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) sketch sinusoidal functions using transformations.

Last day's work: pp. 377-378 A – U
p. 379 #1 – 3

2c, 3a

"In Danger of Failing" List

6.5 Using Transformations to Sketch Sinusoidal Functions Day1

RST

Date: Dec. 3/19

Ex. 1 Sketch (one cycle) for: **do *a* first**

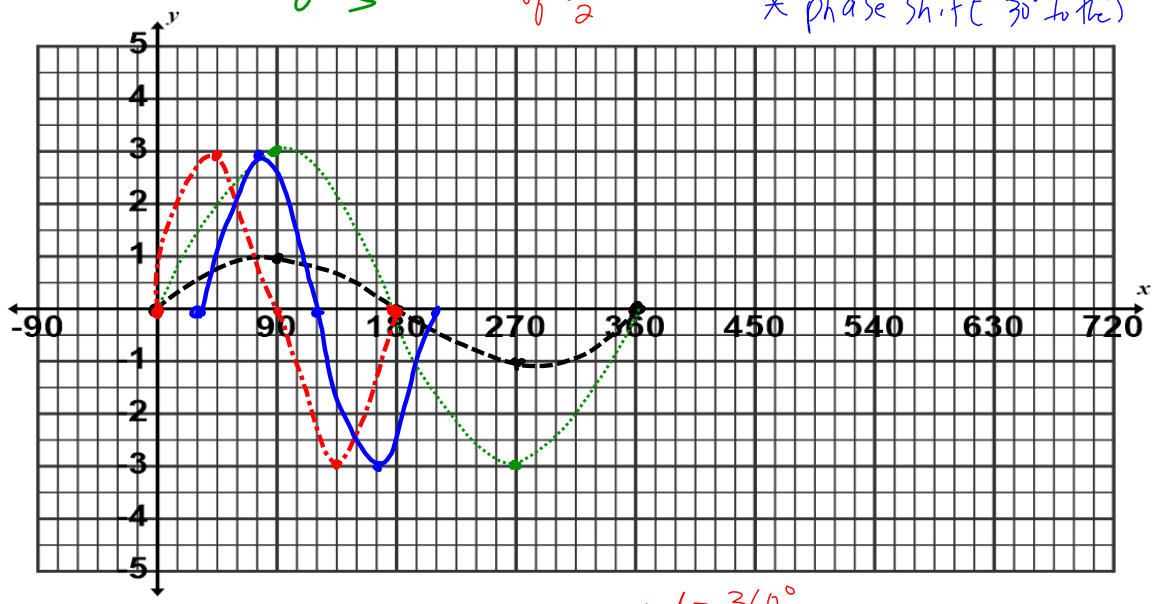
a) $y = \sin x$ b) $y = 3\sin x$ c) $y = 3\sin(2x)$ d) $y = 3\sin(2(x - 30^\circ))$

b) v.s. by a factor of 3

c) h.c. by a factor of $\frac{1}{2}$

d) h.t. 30° the right

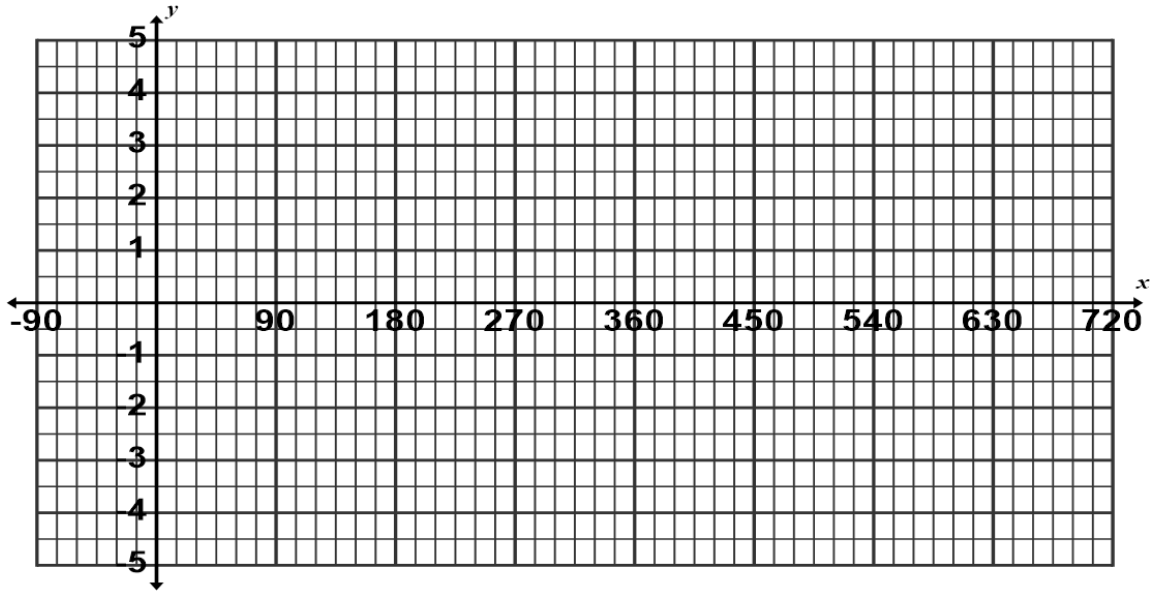
* phase shift 30° to the right



period $= \frac{360^\circ}{k}$

$= \frac{360^\circ}{2}$

$= 180^\circ$



Ex. 2 Graph $y = 2\cos(3(x - 15^\circ)) - 2$ **do *k* first**

amplitude: 2

period: $\frac{360^\circ}{3} = 120^\circ$

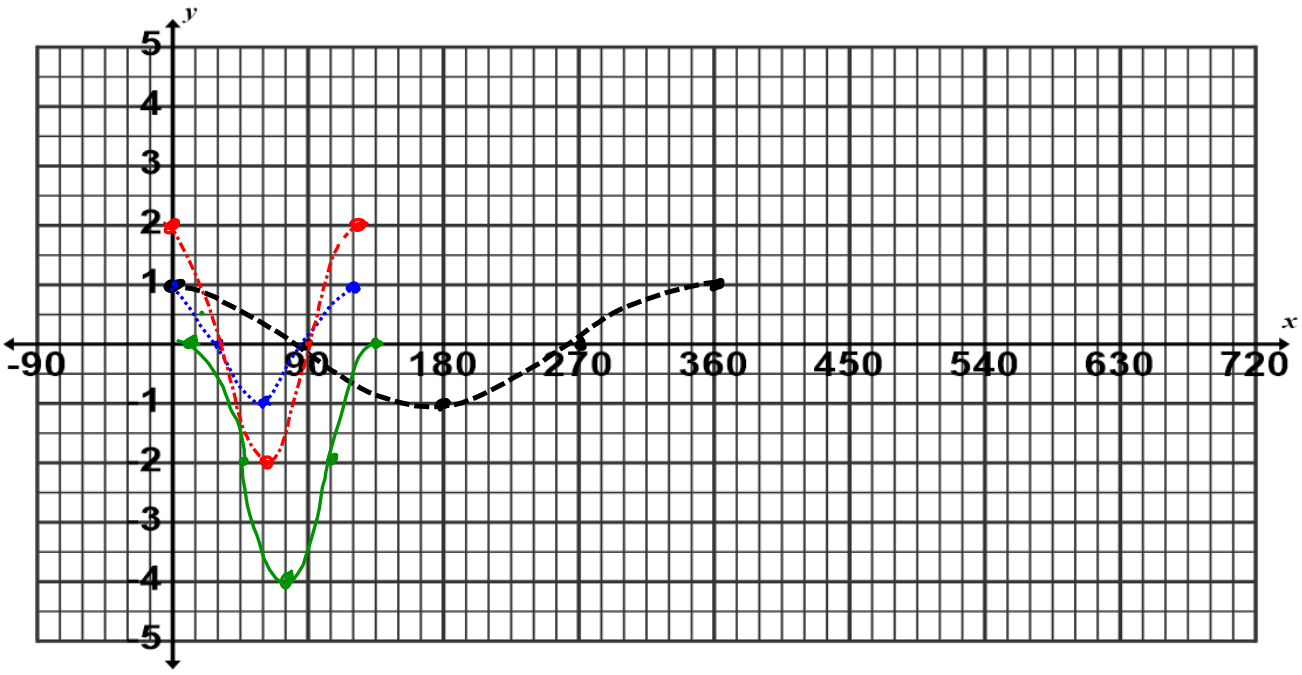
phase shift: 15° to the right

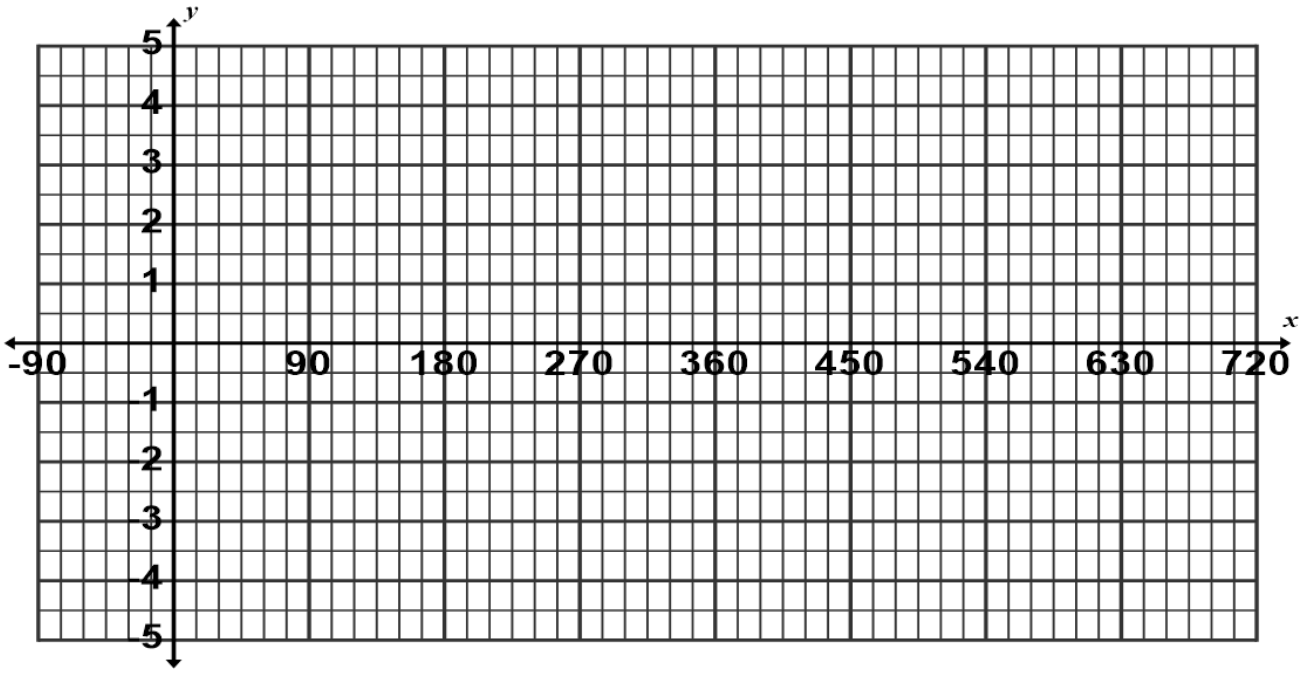
p.381

vertical shift: 2 units down

equation of the axis: $y = -2$

range: $\{y \in \mathbb{R} \mid -4 \le y \le 0\}$

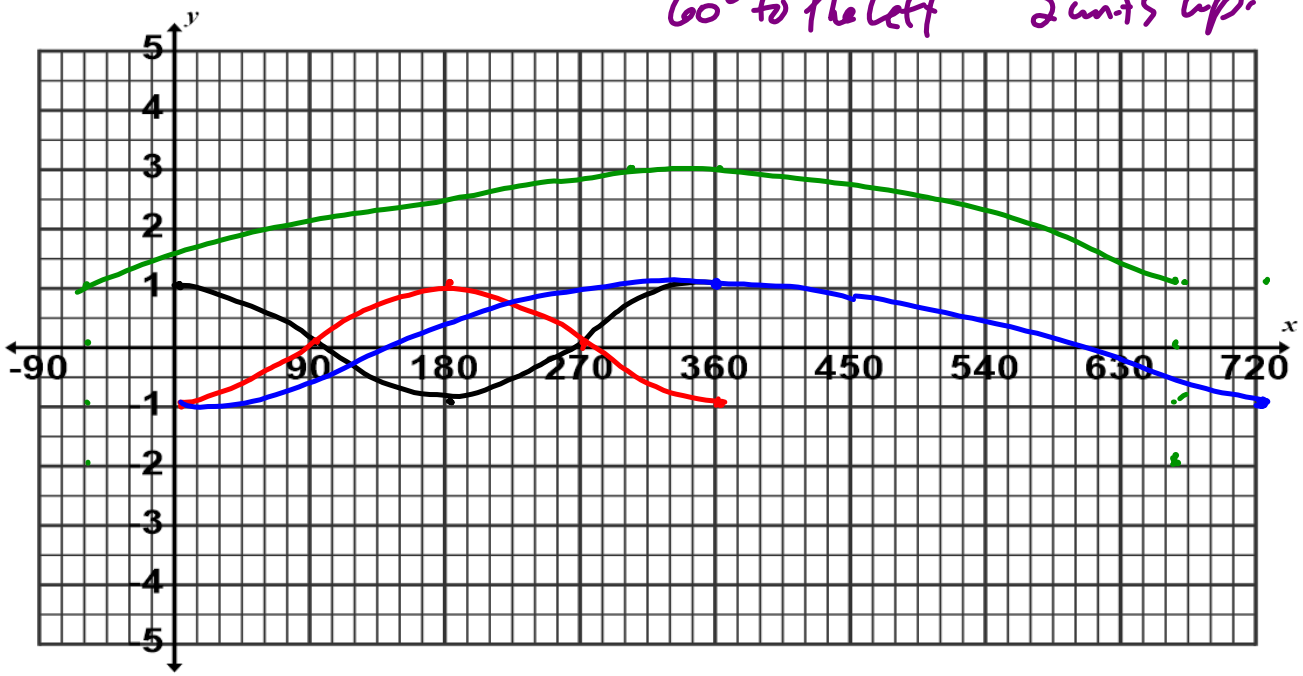


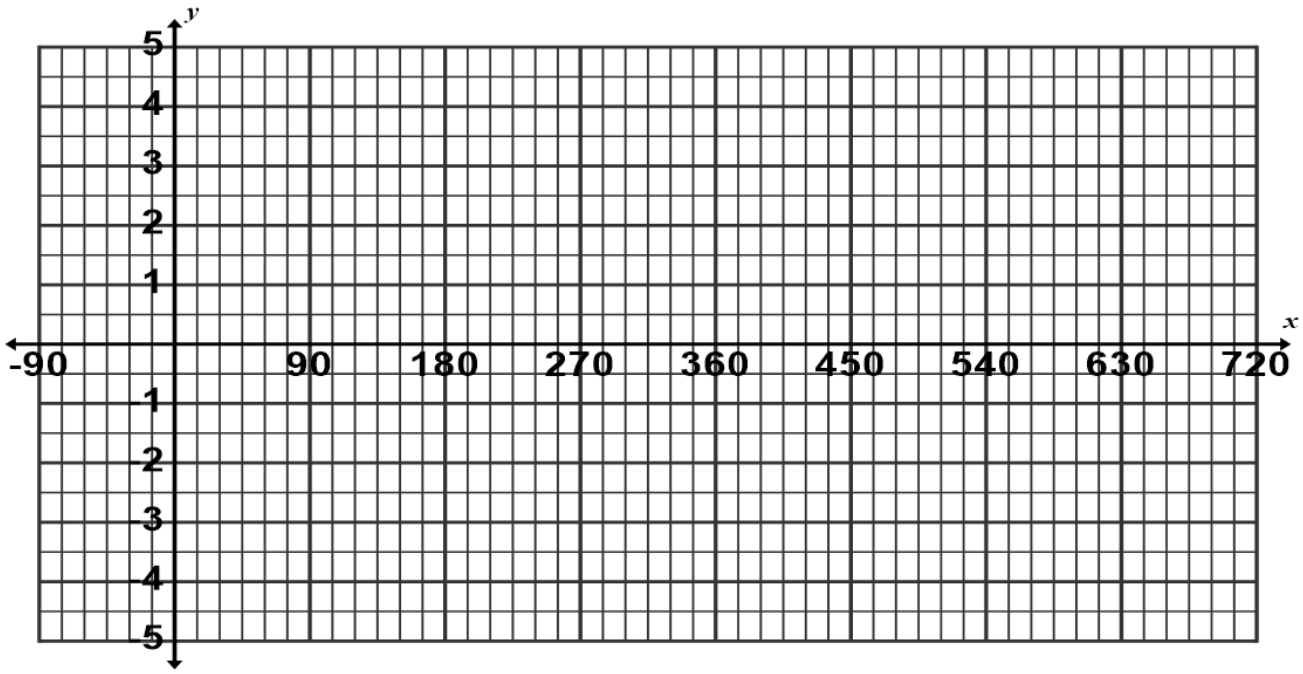


Ex. 3 Graph $y = -\cos\left(\frac{1}{2}x + 30°\right) + 2$? *Did you remember to factor first?*

$= -\cos\left(\frac{1}{2}(x + 60°)\right) + 2$

amplitude: 1 period: 720° phase shift: 60° to the left vertical shift: 2 units up.





General Sinusoidal Functions

$y = a\sin(k(x - d)) + c$ and $y = a\cos(k(x - d)) + c$, where

- the amplitude is a
- the horizontal stretch/compression is $\frac{1}{|k|}$

  resulting in a period of $\frac{360°}{|k|}$
- the phase shift is d units.
- the vertical shift is c units.

Note: If period $= \frac{360°}{|k|}$, then $k = \frac{360°}{\text{period}}$

Are there any Homework Questions you would like to see on the board?

Last day's work: pp. 377-378 A – U
p. 379 #1 – 3

Today's Homework Practice includes:
pp. 383-385 #1 – 4 [12]
Sketch #3 by hand
Work Ahead p. 384 #7abc

6.2 SineTracer.gsp