Today's Learning Goal(s):

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

a) sketch sinusoidal functions using transformations.

6.5 Using Transformations to Sketch Sinusoidal Functions Day1

RST

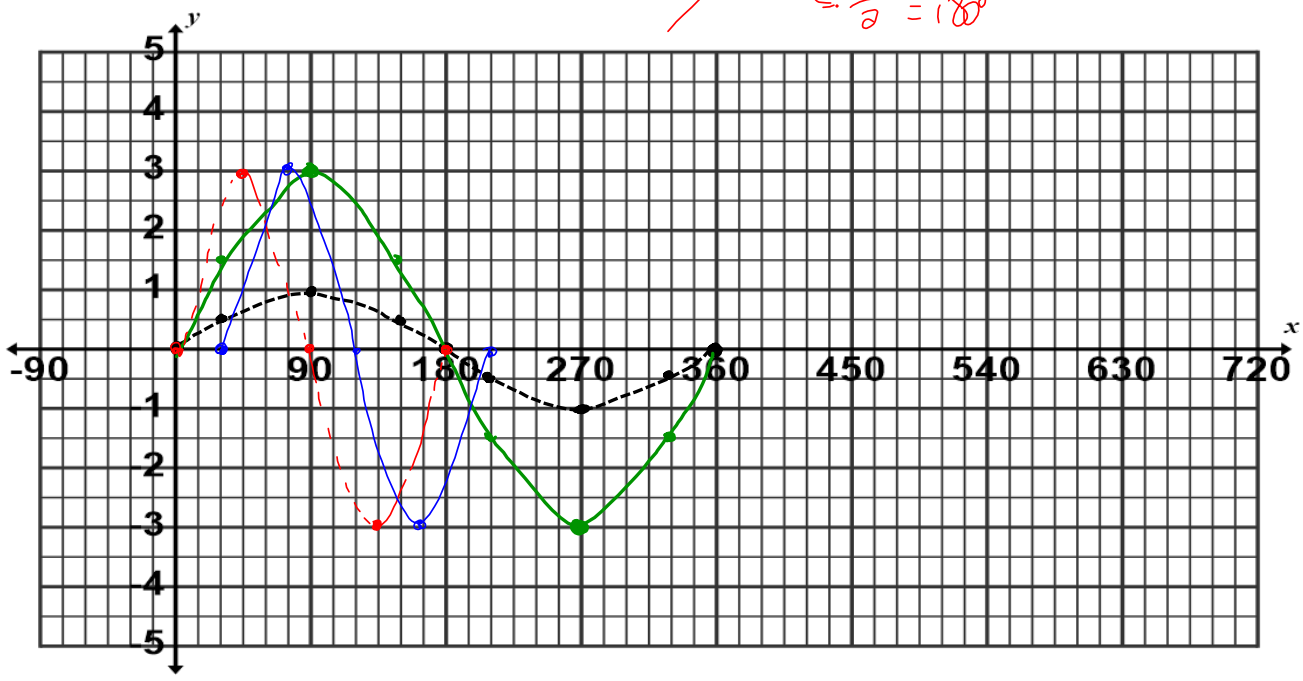
Date: May 16/19

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

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

$k = 2$ period $= \frac{360^\circ}{|k|}$

h.c. by $\frac{1}{2}$ $\therefore \frac{360^\circ}{2} = 180^\circ$

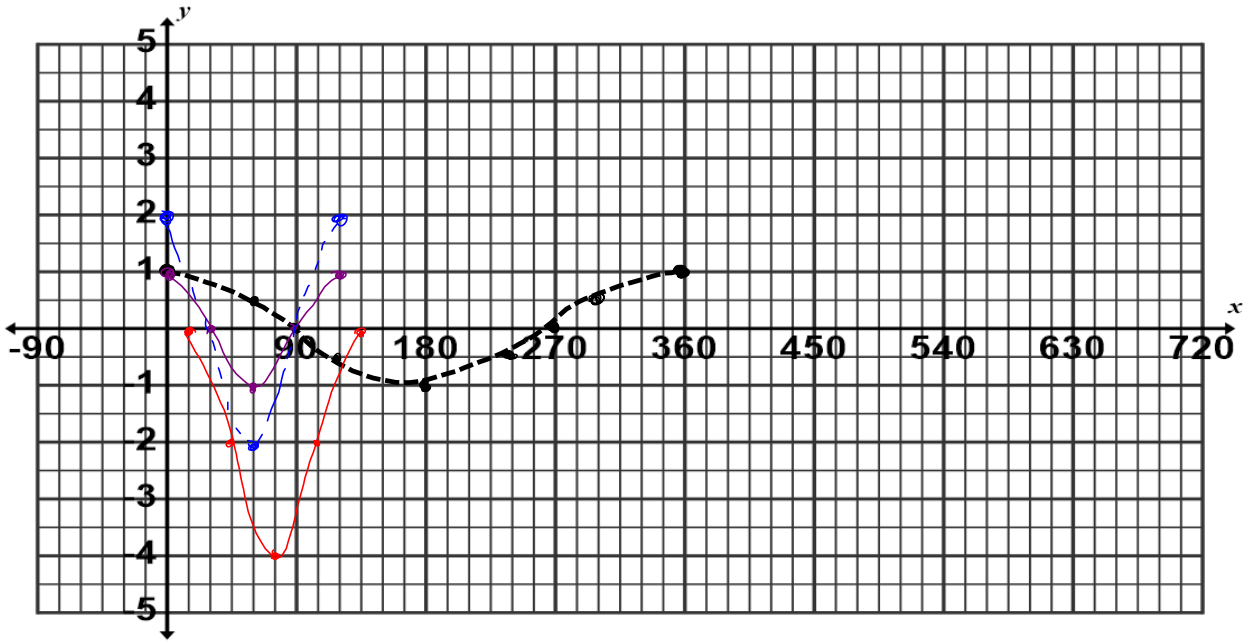


Ex. 2 Graph $y = 2\cos(3(x - 15^\circ)) - 2$ **do *k* first**

amplitude: 2 period: $\frac{360}{3} = 120^\circ$ phase shift: 15° to the right

p.381

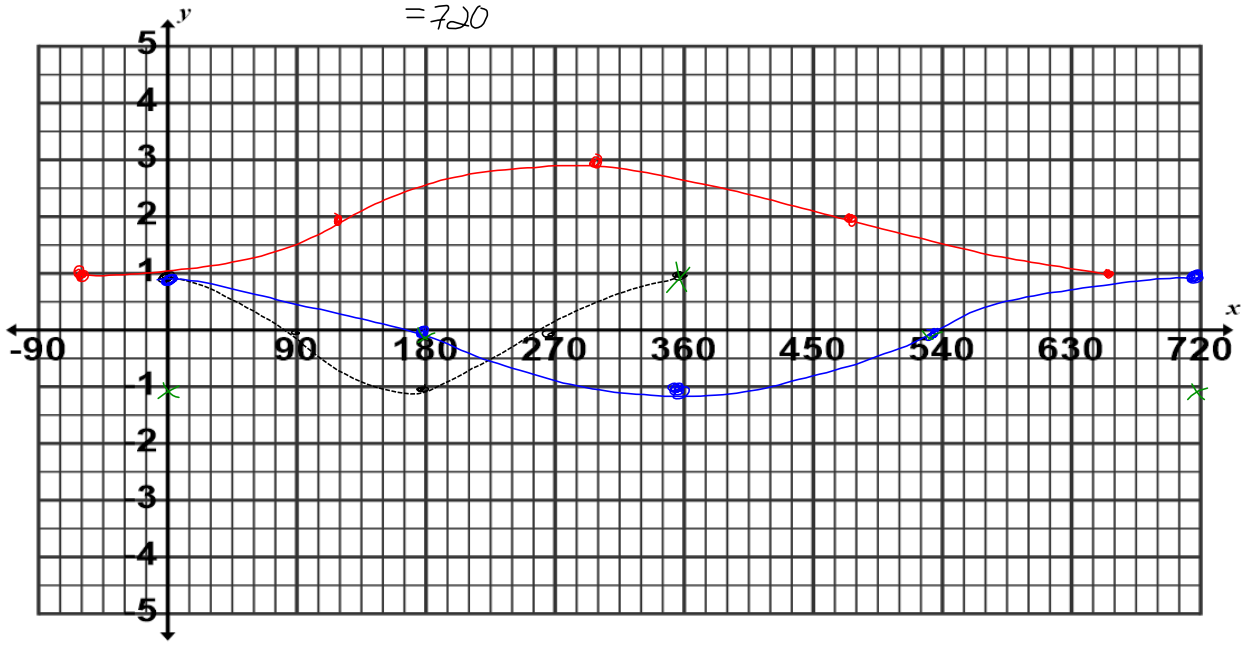
vertical shift: 2 units down equation of the axis: $y = -2$ range: $\{y \in \mathbb{R} \mid -4 \le y \le 0\}$



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

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

amplitude: 1 period: $\frac{360}{\frac{1}{2}} = 720$ phase shift: 60° to the right 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