

Before we begin, are there any questions from last day's work?

Today's Learning Goal(s):

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

- a) Sketch a trig function with 4 transformations.

4.6.1 Combined Transformations of Trigonometric Functions

Date: Oct. 31/19

$$y = a \sin(k(x-d)) + c \text{ and } y = a \cos(k(x-d)) + c$$

Ex. 1 Given $y = 3 \sin(2(x - 60^\circ)) + 1$, describe the effects of a , k , d , c .

- a vertical stretch by a factor of 3
- k horizontal compression by a factor of 2 (the period will now be 180°)
- d horizontal translation of 60° to the right
- c vertical translation of 1 unit up

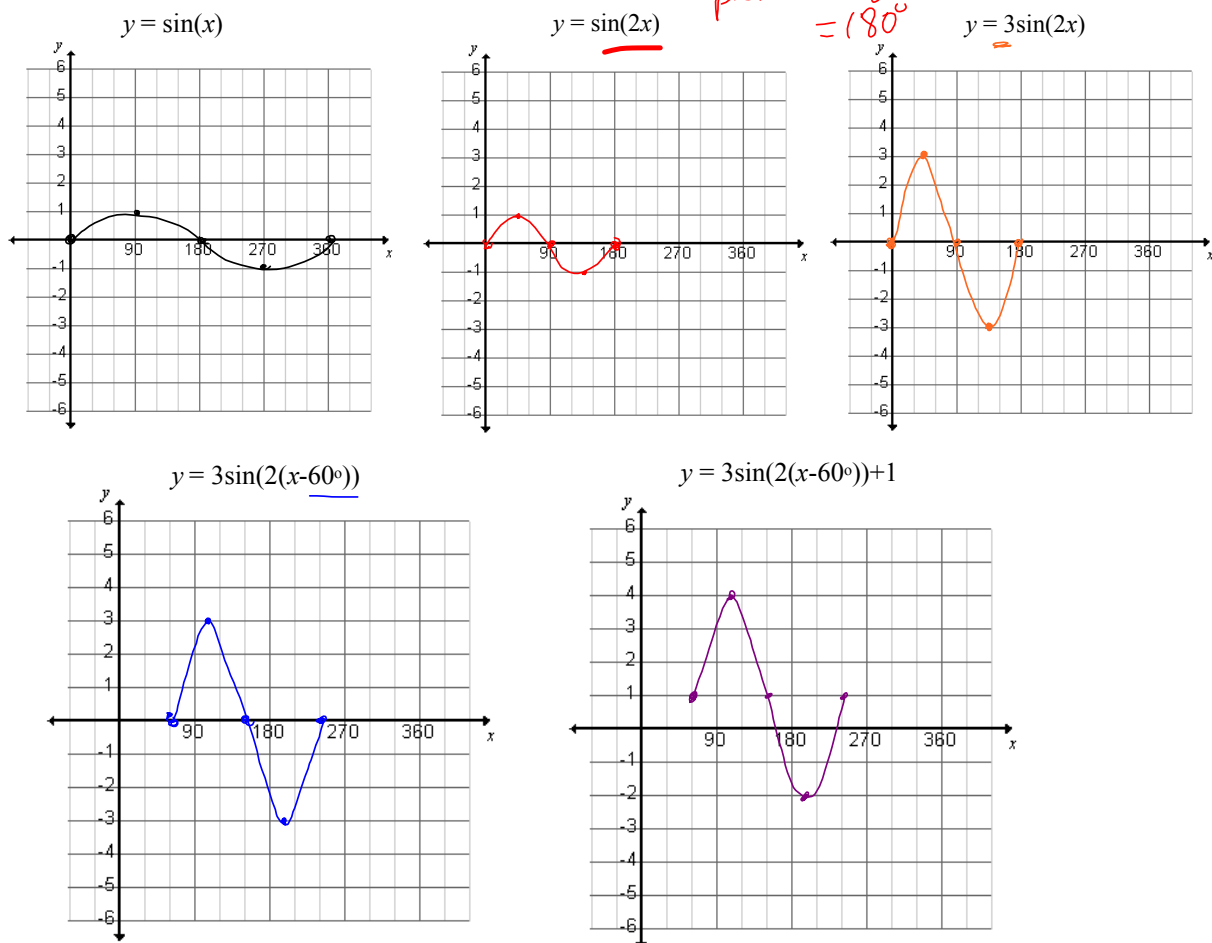
Ex.2 Sketch $y = 3 \sin(2(x - 60^\circ)) + 1$ by hand.

- Method: 1. sketch the base function [$y = \sin x$ or $y = \cos x$]
 2. apply any compressions and stretches and then sketch again.

[use the key points: 0° , 90° , 180° , 270° , 360°]

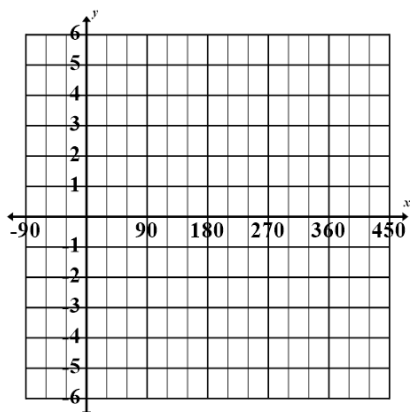
3. apply any translations and sketch the final curve

$$\text{period} = \frac{360}{2} = 180^\circ$$

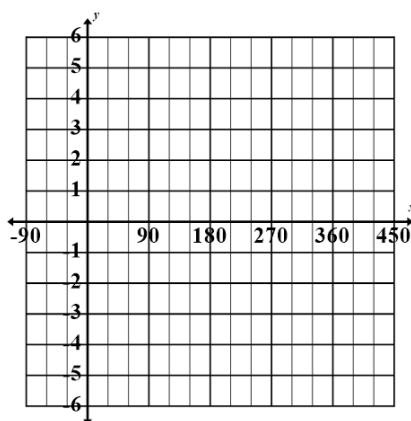


4.6.2 Practice Sketch by hand.

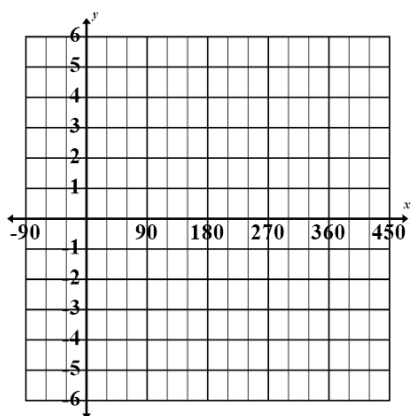
a) $y = 2 \sin(x - 90^\circ)$



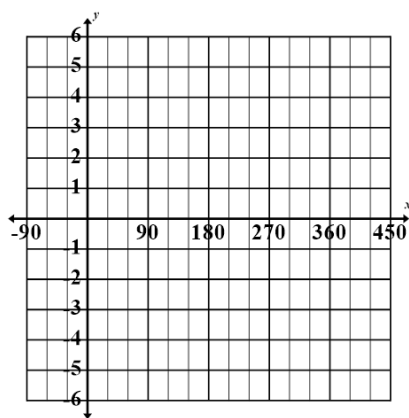
b) $y = \sin(3x) + 4$



c) $y = \cos(2(x + 30^\circ))$

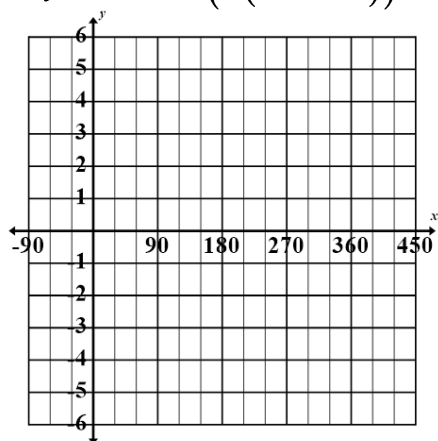


d) $y = 3 \sin(4(x - 60^\circ)) - 2$

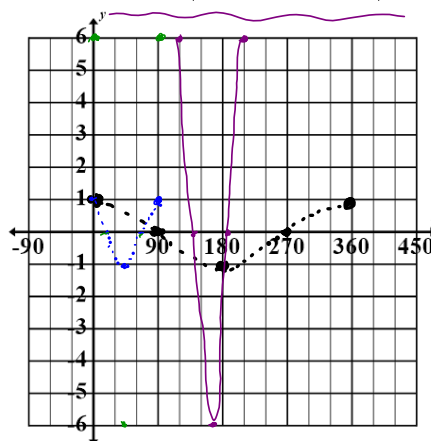


4.6.2 Practice Sketch by hand.

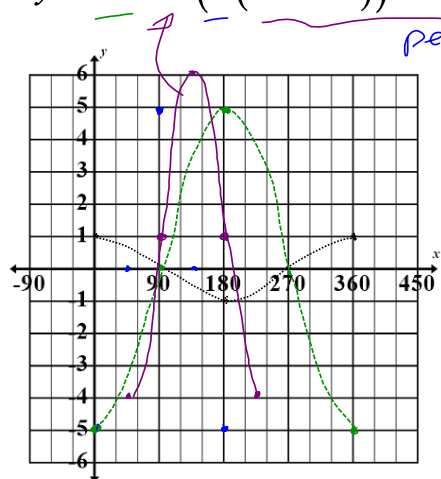
e) $y = -4\sin(3(x + 60^\circ)) + 2$



f) $y = 6\cos(4(x - 120^\circ))$ $R=4$ $\text{period} = \frac{360^\circ}{R}$



g) $y = -5\cos(2(x - 45^\circ)) + 1$



h) $y = 4\sin\left(\frac{1}{2}(x - 60^\circ)\right) + 2$ $\text{period} = \frac{360^\circ}{\frac{1}{2}}$

