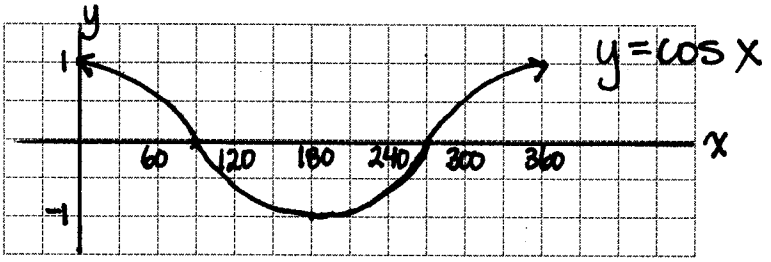
A Review of Graphing Trig Functions

Eg. 1: Graph $y = 4\cos(2x + 60°) - 1$ ⟹ factor out 2

$\therefore y = 4\cos[2(x+30)] - 1$

1. Start with the basic trig graph that corresponds to the function given.



From given function: $y = 4\cos[2(x+30)] - 1$

2. a) Identify the amplitude and period of the given function. Remember: $Period = \frac{360°}{|k|}$

amplitude: $a = 4$ period $= \frac{360}{2} = 180°$

b) Identify the phase shift and vertical shift.

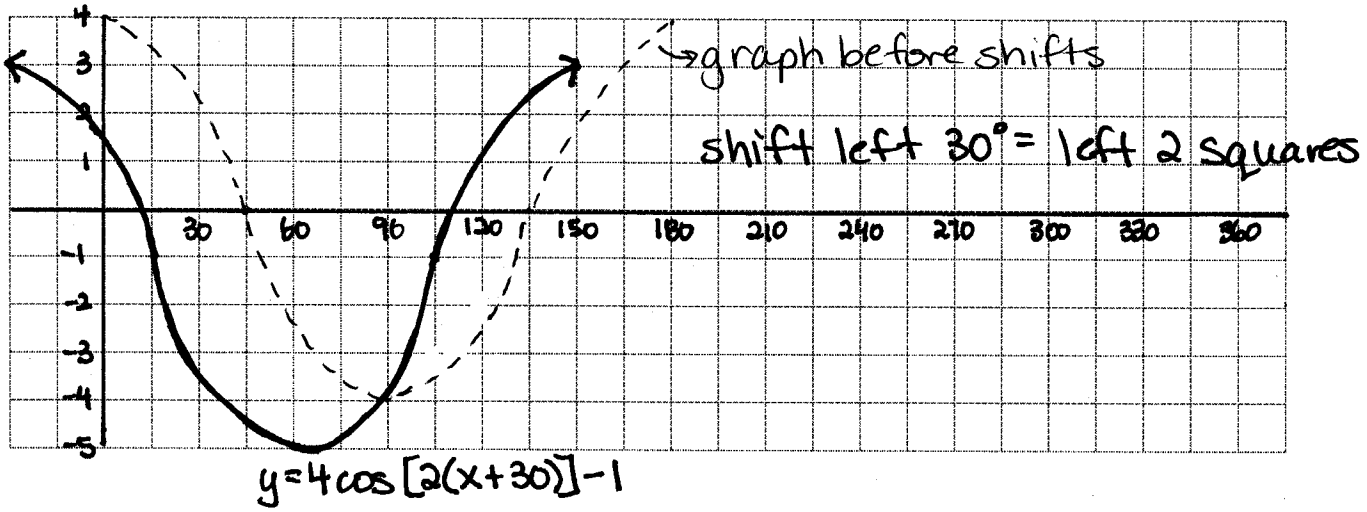
phase shift: left 30° vert. shift: down 1

3. Determine the scale for the horizontal axis. Be sure your scale accommodates for the period as well as the phase shift.

Find: $GCF\left(\frac{Period}{4}, phase\ shift\right)$ $GCF\left(\frac{180}{4}, 30\right)$ $= GCF(45, 30) = 15$ ← let 15° = 1 square

4. Lightly sketch one complete cycle of the graph with the correct amplitude and period only.

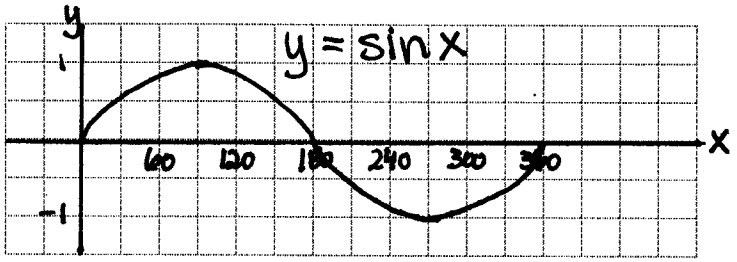
5. Apply the phase shift and vertical shift to the key points and draw in the completed graph.



6. Finally, be sure the scale on both axes is clearly labeled and the final graph is clearly identified.

Eg. 2: Graph $y = -3\sin\left[4(x-30°)\right]+2$

1. Start with the basic trig graph that corresponds to the function given.



From given function $y=-3\sin[4(x-30)]+2$

2. a) Identify the amplitude and period of the given function. Remember: $Period = \frac{360°}{|k|}$

amplitude = 3 period = $\frac{360}{4} = 90°$

b) Identify the phase shift and vertical shift.

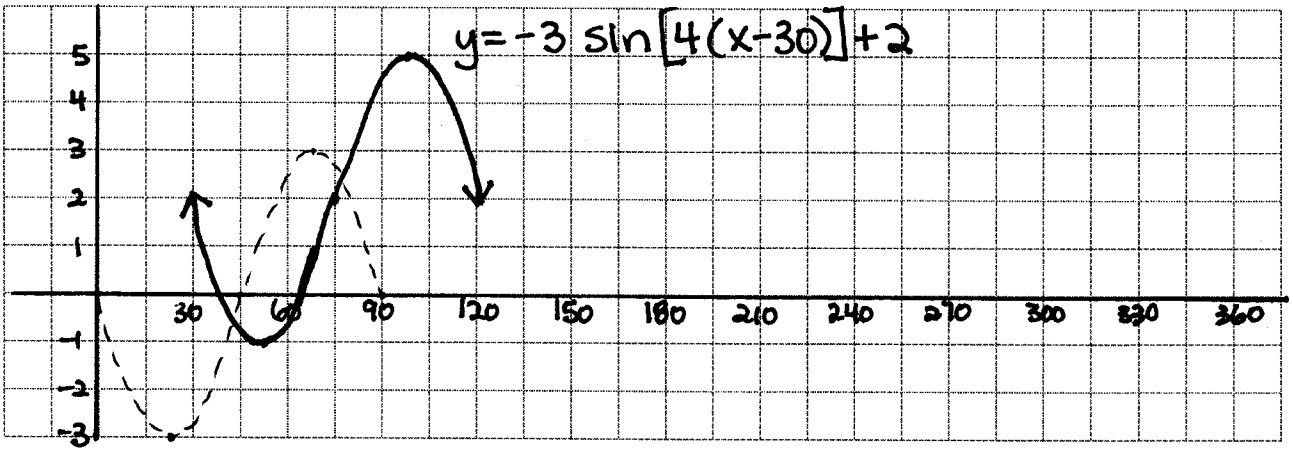
phase shift: right 30° vert. shift: up 2

3. Determine the scale for the horizontal axis. Be sure your scale accommodates for the period as well as the phase shift.

Find: $GCF\left(\frac{\text{period}}{4}, \text{phase shift}\right)$ $GCF\left(\frac{90}{4}, 30\right)$ $= GCF(22.5, 30) = 7.5$ → 7.5° = 1 square (use 15° = 1 square instead)

4. Lightly sketch one complete cycle of the graph with the correct amplitude and period only.

5. Apply the phase shift and vertical shift to the key points and draw in the completed graph.



6. Finally, be sure the scale on both axes is clearly labeled and the final graph is clearly identified.