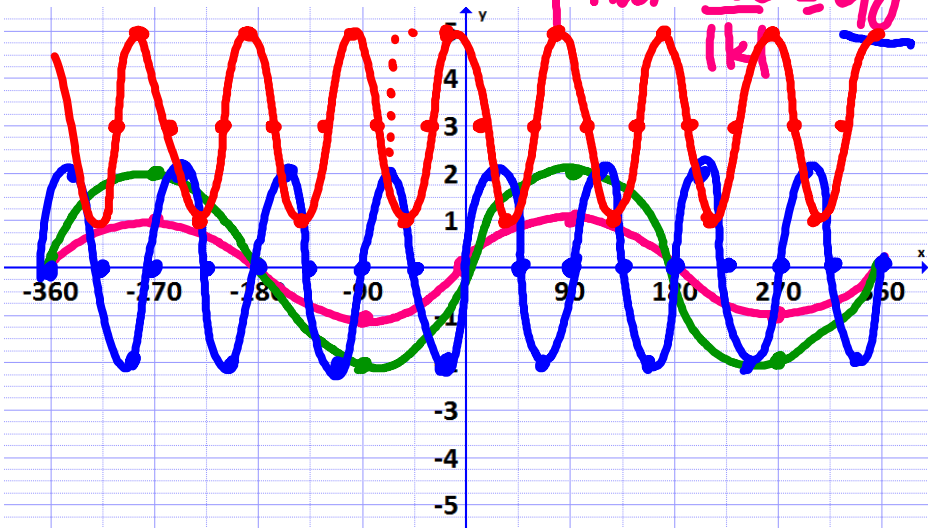
Using Transformations to Sketch the Graphs of Sinusoidal Functions

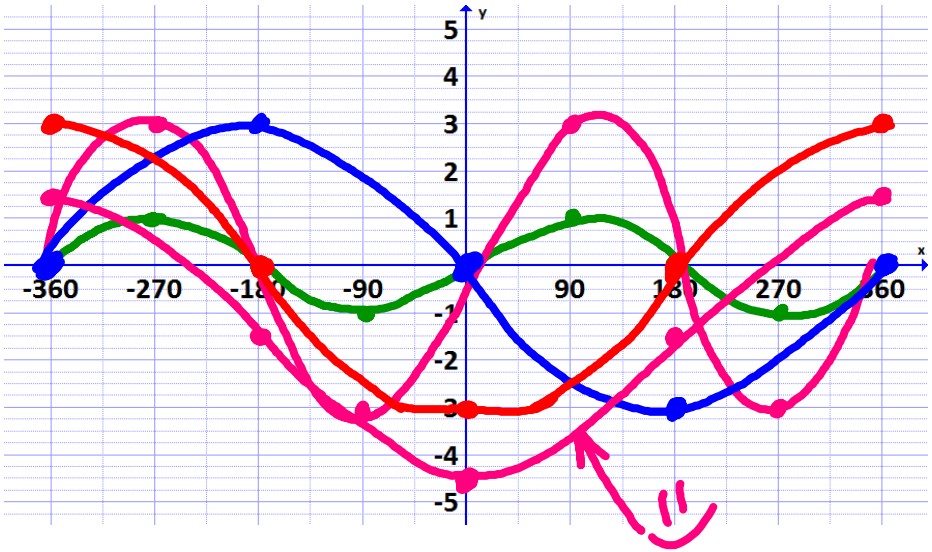
Graph $f(x) = 2\sin\left(4(x - 60)\right) + 3$



Explain the steps you took to create the graph on the left.

1. Apply vertical stretch (double maxes and mins.. zeros did not change)
2. Apply horizontal compression by changing the period to $\frac{360}{|k|}$
3. Apply the translations (up 3 units) right 60

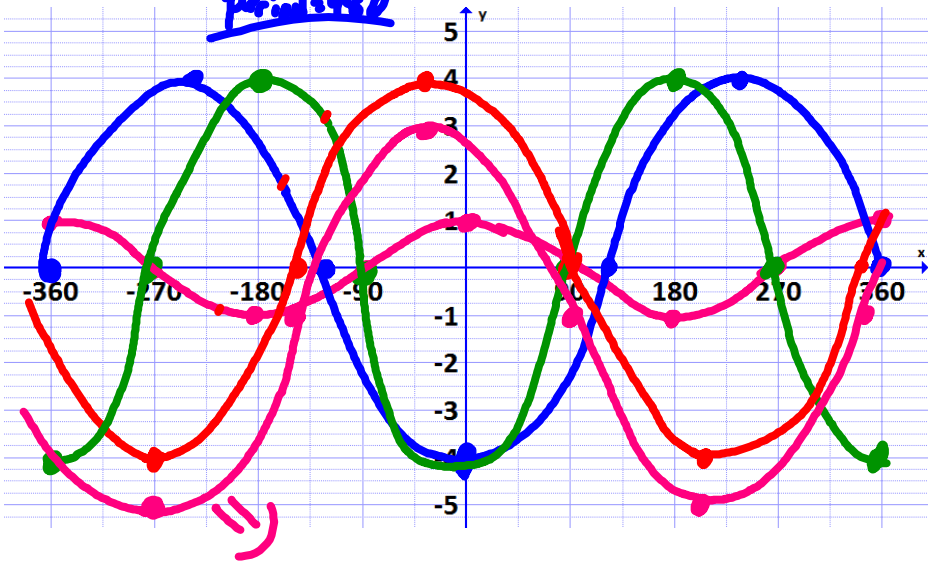
Graph $f(x) = 3\sin\left(-\frac{1}{2}(x + 180)\right) - 1.5$



Explain the steps you took to create the graph on the left.

1. Multiply y-values by 3.
2. Reflect graph in y-axis
   ↳ multiply x-values by 2 ($\text{period} = \frac{360}{|k|} = 720$)
3. Shifted 180° to left.
4. Shifted down 1.5.

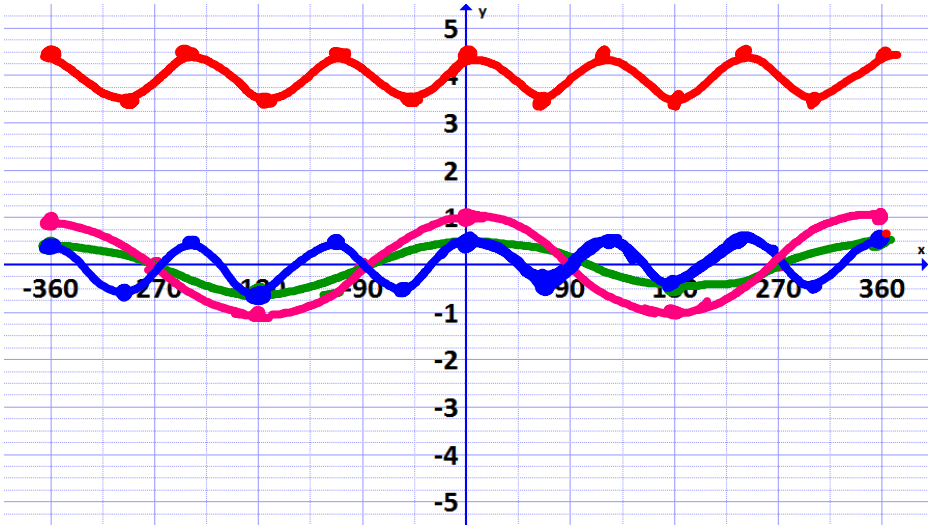
Graph $f(x) = -4\cos\left(\frac{3}{4}(x+270)\right) - 1$



Explain the steps you took to create the graph on the left.

1. Apply a
2. Apply k
3. Apply d
4. Apply c

Graph $f(x) = 0.5\cos(-3(x-360)) + 4$



Explain the steps you took to create the graph on the left.