5.3 Transformations of Sine and Cosine Worksheet #1

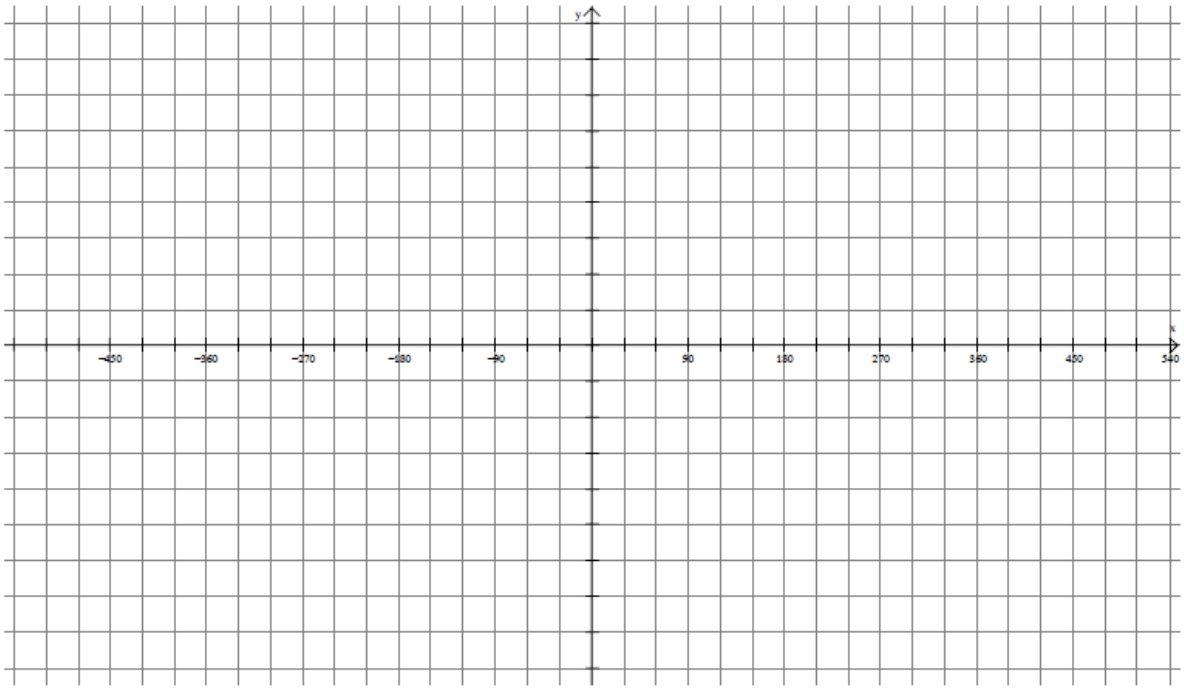
MCR3U

Jensen

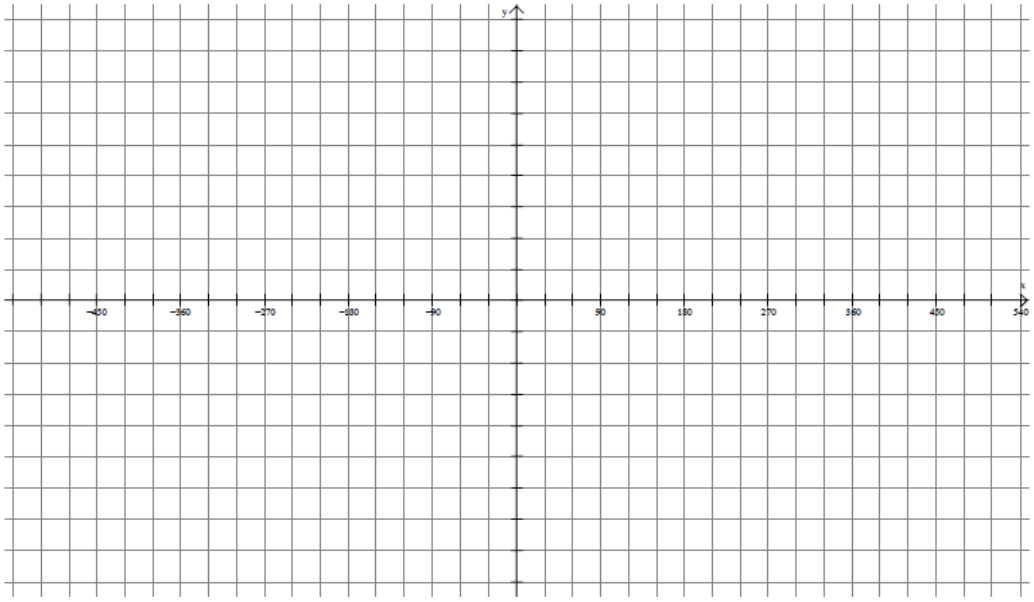
Instructions: For each of the following start with two cycles of the parent graph (-360 to 360). Transform key points to produce the new graph.

1) Using transformations, graph two cycles of the following trigonometric functions. State the period, phase shift, amplitude, and vertical displacement.

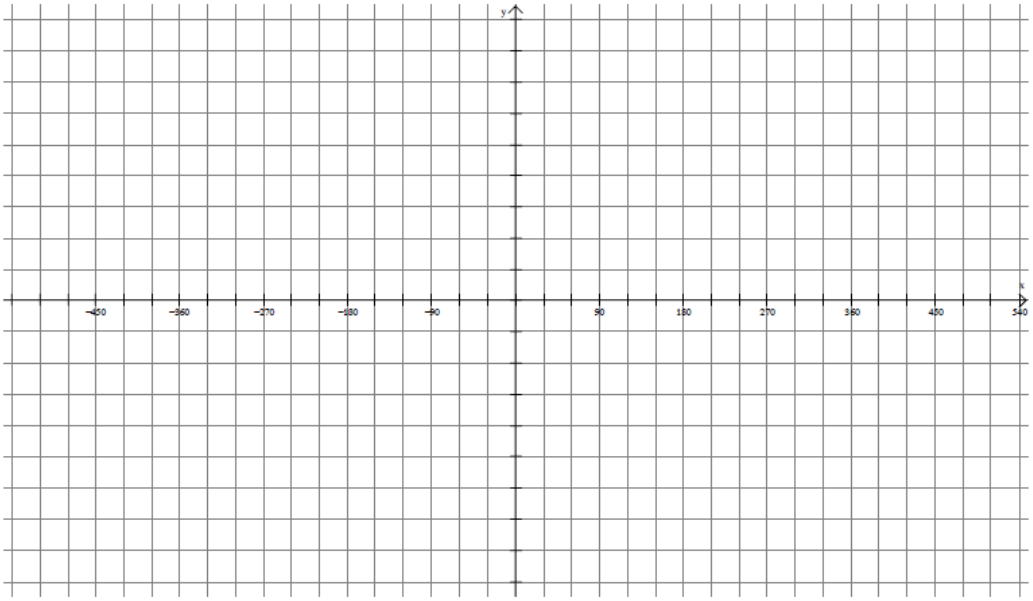
a) $y = 4\cos\left(\theta + 180^{0}\right) + 2$



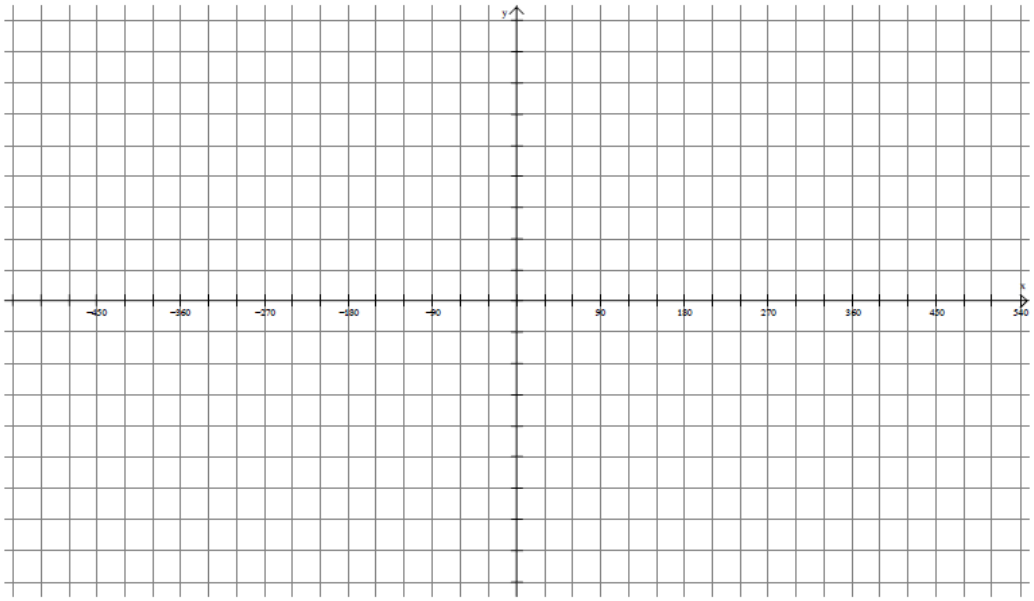
b) $y = \sin\left[2\left(\theta + 30^0\right)\right] + 3$



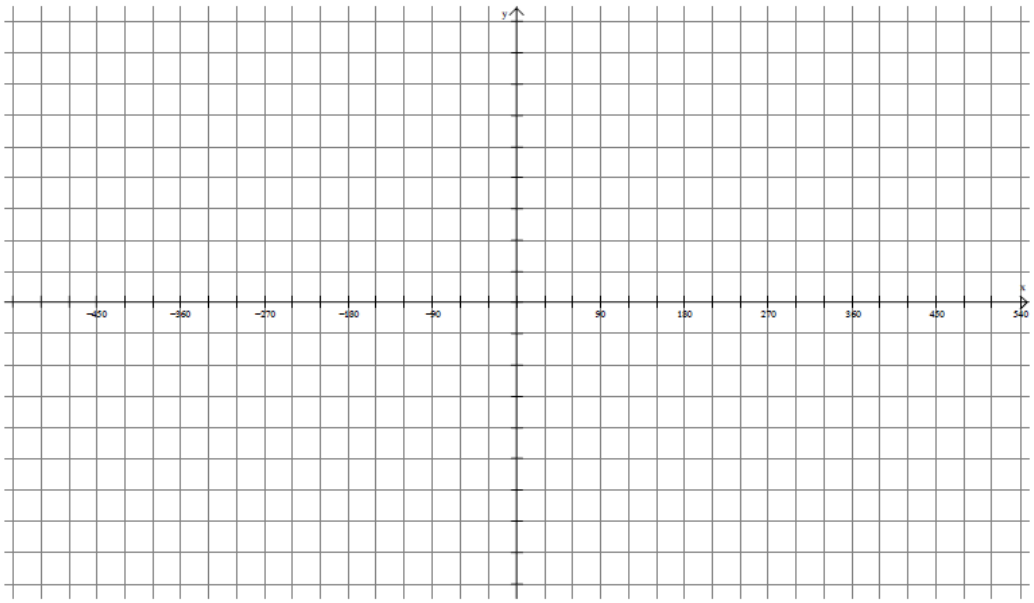
c) $y = 2\sin\left[3\left(\theta - 180^0\right)\right]$



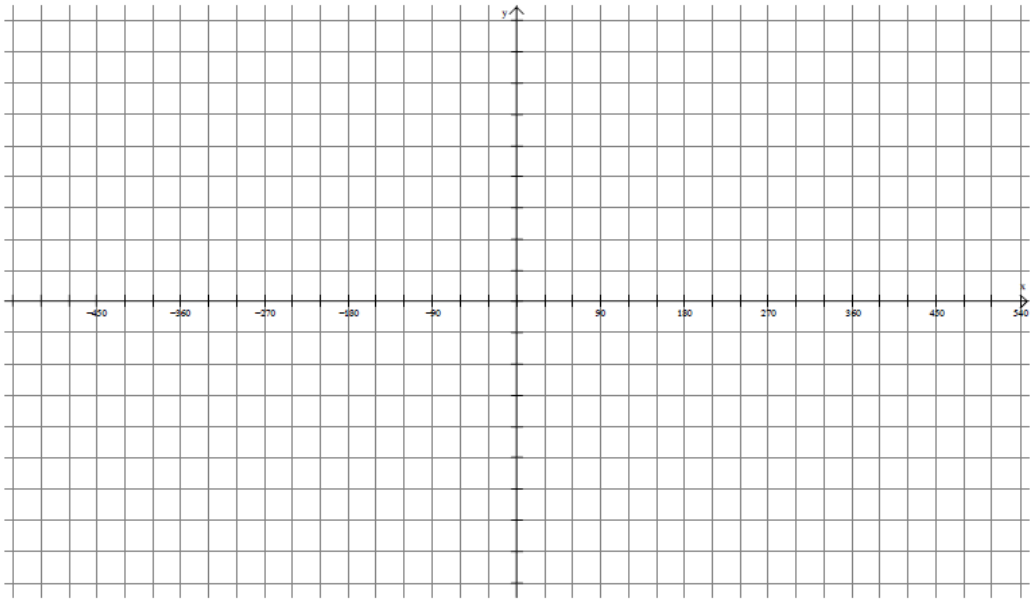
d) $y = -3\cos(2\theta) + 4$



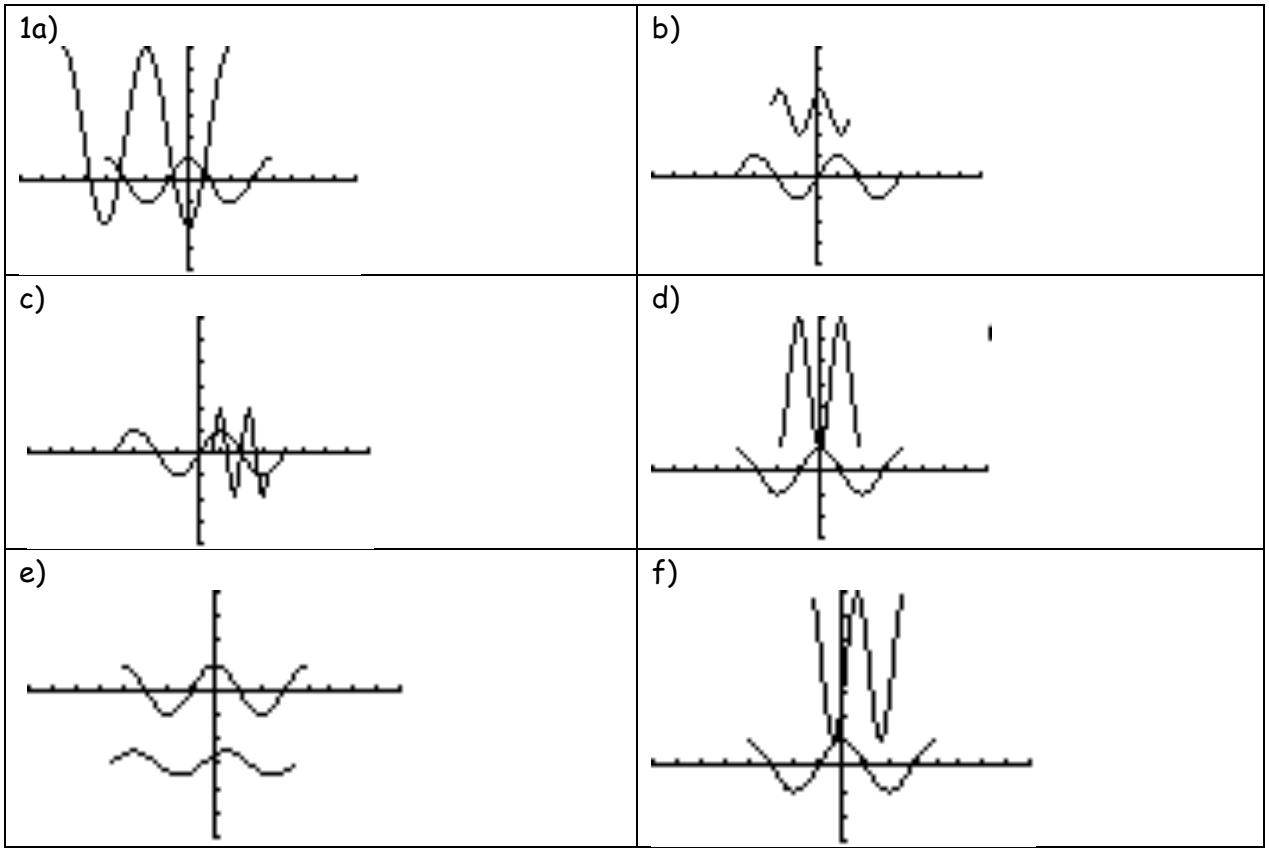
e) $y = \frac{1}{2}\sin(\theta + 45^0) - 3$



f) $y = 3\cos\left[2\left(\theta - 60^0\right)\right] + 4$



Answers



a) period= 360°
phase shift = left 180°
amplitude = 4
vertical shift = up 2

b) period = 180°
phase shift = left 30°
amplitude = 1
vertical shift = up 3

c) period = 120°
phase shift = right 180°
amplitude = 2
vertical shift = none

d) period = 180°
phase shift = none
amplitude = 3
vertical shift = up 4

e) period = 360°
phase shift = left 45°
amplitude = $\frac{1}{2}$
vertical shift = down 3

f) period = 180°
phase shift = right 60°
amplitude = 3
vertical shift = up 4