AGS 3 Name: _____ Period: _____ Date: _____

Notes 7.3 – Periodic Graphs

Identify the parts of the periodic graph:

$$y = a\sin(b\theta) + d$$

a: amplitude

b: determines period

d: vertical shift

Finding the value of b: $\frac{360^\circ}{b} = period$ or $b = \frac{360^\circ}{period}$

a. Write the equation for a sine graph with an amplitude of 3, a period of 180°, and a vertical shift down 1.

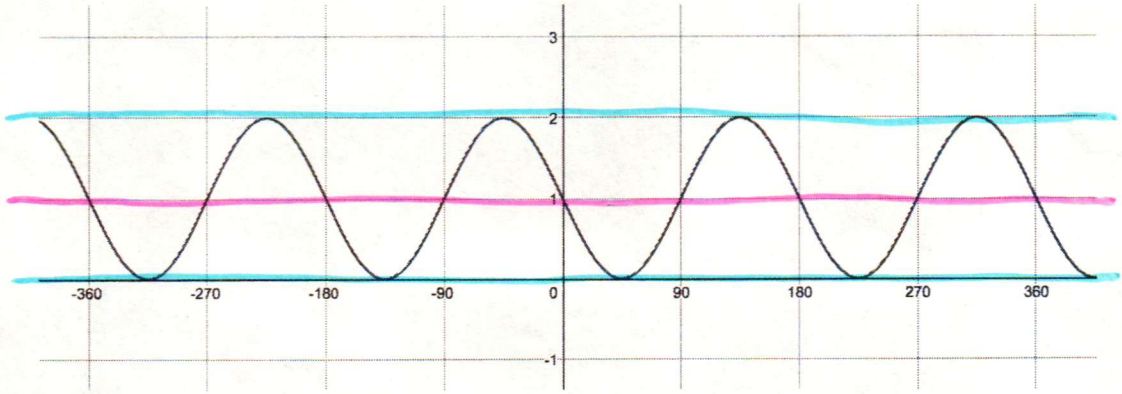
Equation: $y = 3\sin(2\theta) - 1$

b. Write the equation for a cosine graph with an amplitude of 2, a period of 120°, and a vertical shift up 1, and is reflected over the center.

Equation: $y = -2\cos(3\theta) + 1$

Identify the values in the graph and then write the equation that would create the given graph.

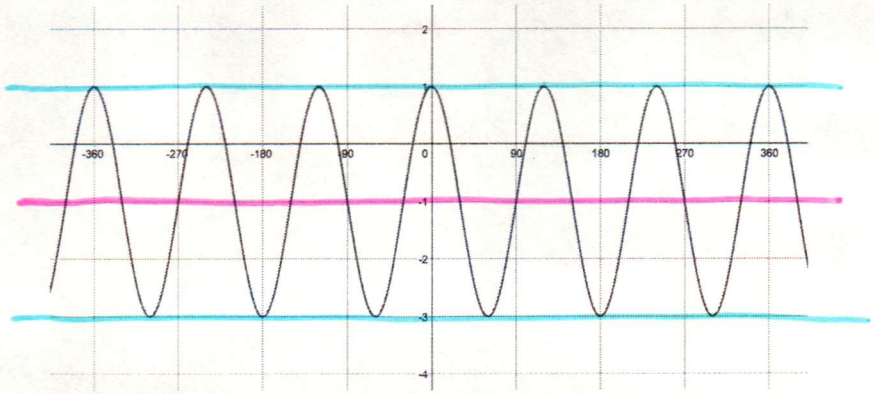
c.



Amplitude: 1 Vertical Shift: +1 Period: 180°

Equation: $y = -\sin(2\theta) + 1$

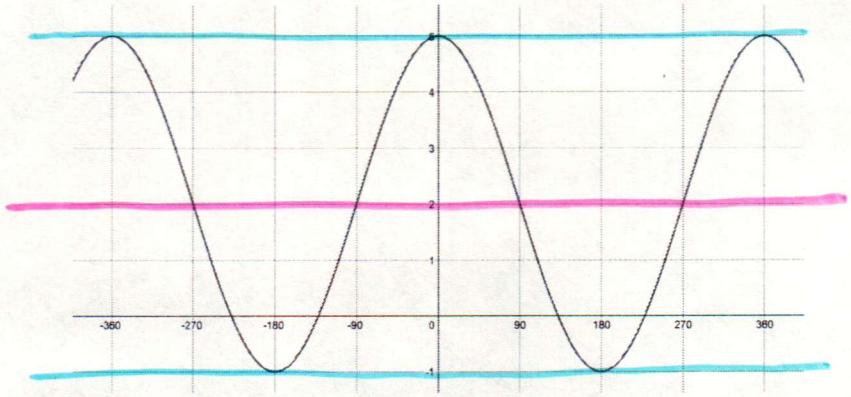
d.



Amplitude: 2 Vertical Shift: -1 Period: 120°

Equation: $y = 2\cos(3\theta) - 1$

e.



Amplitude: 3 Vertical Shift: $+2$ Period: 360°

Equation: $y = 3\cos\theta + 2$

Looking at the unit circle:

$0^\circ = 0\pi$

$90^\circ = \frac{\pi}{2}$

$180^\circ = \pi$

$270^\circ = \frac{3\pi}{2}$

$360^\circ = 2\pi$

Graphing using Radians – Equations with radians use x instead of θ

Finding the period with radians: $\frac{2\pi}{b} = period$

b = 2

period = $\frac{2\pi}{2} = \pi$

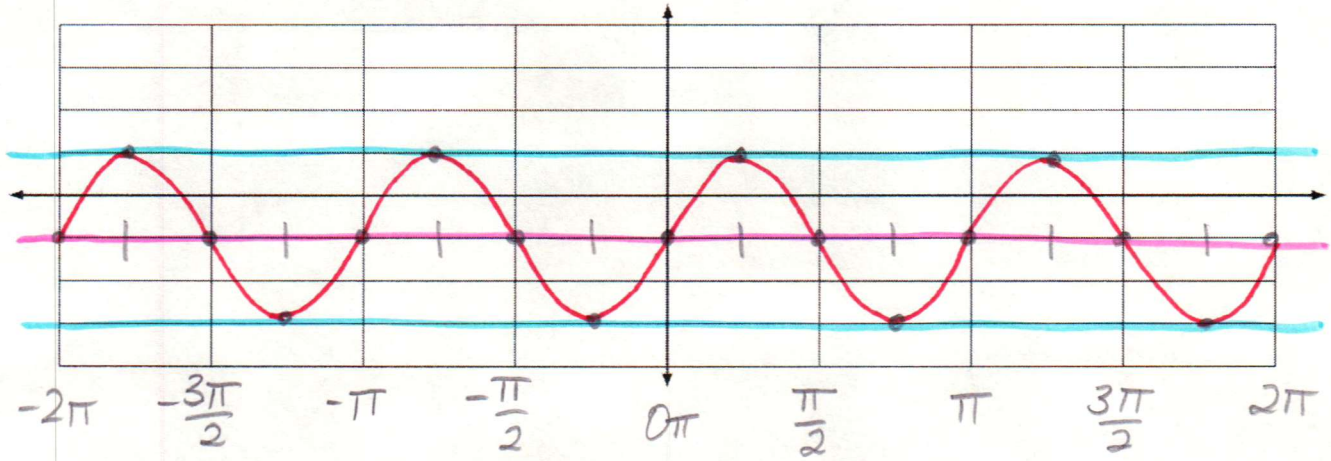
b = 3

period = $\frac{2\pi}{3}$

b = 4

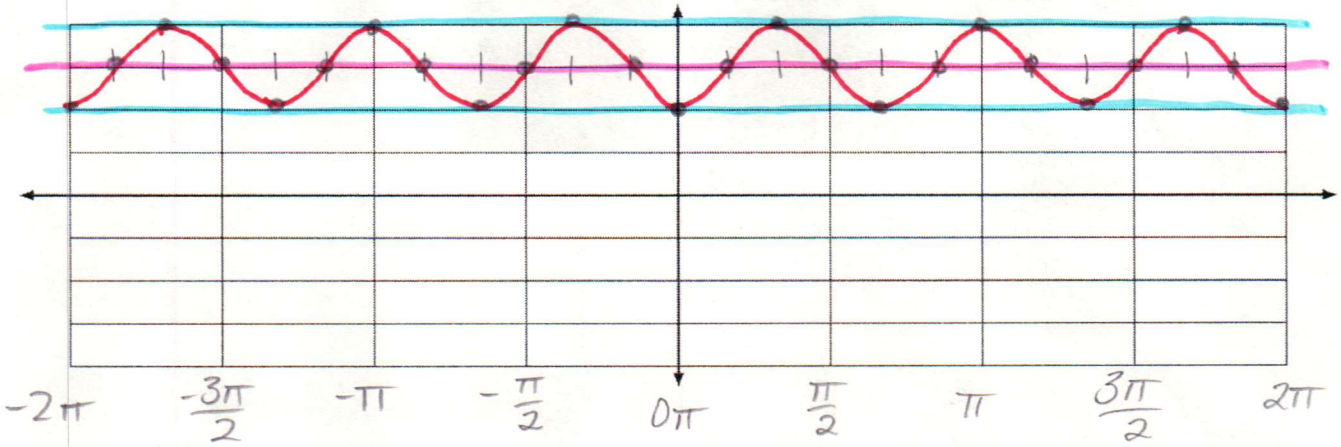
period = $\frac{2\pi}{4} = \frac{\pi}{2}$

Graph $y = 2\sin(2x) - 1$



Amplitude: 2 Vertical Shift: -1 Period: π

Graph $y = -\cos(3x) + 3$



Amplitude: 1 Vertical Shift: $+3$ Period: $\frac{2\pi}{3}$