Name Key Date_____ Hour_____

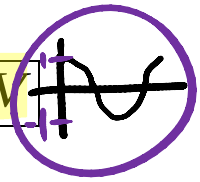
Section 14.1 - 14.2 : Day 3

Alg 2 Trig G

TRANSFORMATIONS OF TRIG FUNCTIONS

$$y = A \bullet \sin(B(\theta - D)) + V$$

$$y = A \bullet \cos(B(\theta - D)) + V$$



V = vertical shift up or down (up or down)
A = amplitude vertical stretch or shrink
B = horizontal stretch or shrink
D = displacement phase shift (right or left)

$y = 3(x+2)^2 - 7$

A V

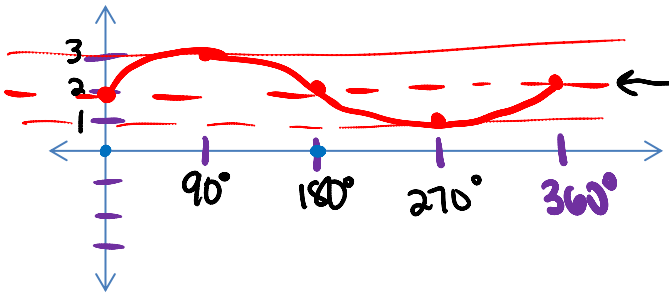
Period = $\frac{360}{B}$ $\quad B = \frac{360}{period}$ for degrees

Period = $\frac{2\pi}{B}$ $\quad B = \frac{2\pi}{period}$ for radians

Don't panic, we are starting with vertical changes only! We will get to the horizontal changes later….

1) $y = \sin(\theta) + 2$ $\quad 1 \cdot \sin(\theta) + 2$
(use degrees!)

Amplitude 1 Period 360° Critical Values 90°



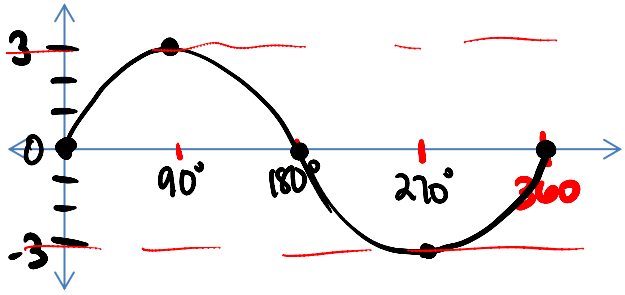
Vertical Shift up 2 (midline) Max 3 Min 1

vertical shift + amp $\quad$ vert shift − amp

2 + 1 $\quad$ 2 − 1

2) $y = 3\sin(\theta)$
(use degrees!)

Amplitude 3 Period 360° Critical Values 90°

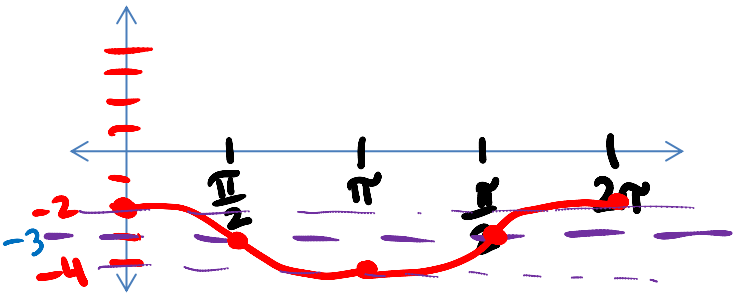


Vertical Shift (midline) 0 Max 3 Min -3

0 + 3 $\quad$ 0 − 3

3) $y = \cos(x) - 3$ (use radians!)

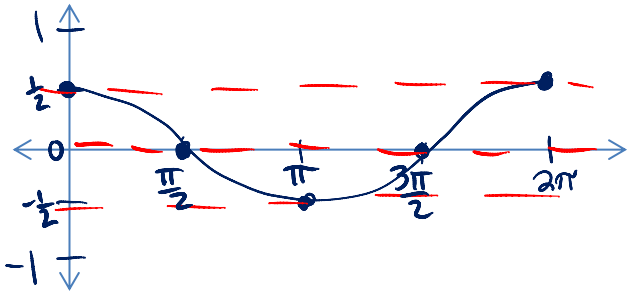
Amplitude 1 Period 2π Critical Values $\frac{\pi}{2}$



Vertical Shift down 3 (midline) -3 Max -2 $-3+1$ Min -4 $-3-1$

4) $y = \frac{1}{2}\cos(x)$ (use radians!)

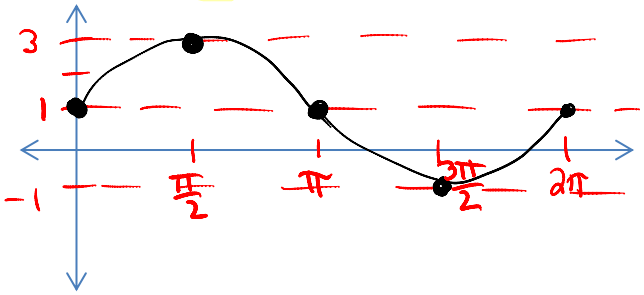
Amplitude $\frac{1}{2}$ Period 2π Critical Values $\frac{\pi}{2}$



Vertical Shift 0 (midline) Max $\frac{1}{2}$ $0+\frac{1}{2}$ Min $-\frac{1}{2}$ $0-\frac{1}{2}$

5) $y = 2\sin(x) + 1$ (use radians!)

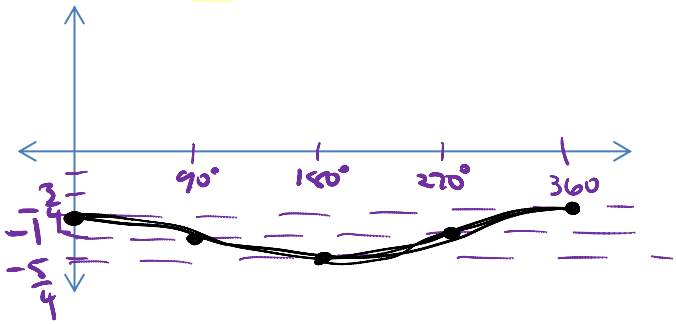
Amplitude 2 Period 2π Critical Values $\frac{\pi}{2}$



Vertical Shift up 1 (midline) Max 3 $1+2$ Min -1 $1-2$

6) $y = \frac{1}{4}\cos(\theta) - 1$ (use degrees!)

Amplitude $\frac{1}{4}$ Period $360°$ Critical Values $90°$



Vertical Shift down 1 Max $-\frac{3}{4}$ $(-.75)$ $-1+\frac{1}{4}$ Min $-\frac{5}{4}$ $-1-\frac{1}{4}$