

4.4 Trig Graphs: Shifts

$$y = a \sin b(x-h) + K$$

$$y = a \cos b(x-h) + K$$

$$y = |x+3|$$

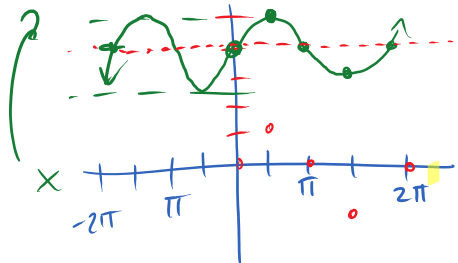
Amp: $|a|$ } Stretches/
Shrinks

Per: $\frac{2\pi}{|b|}$

Freq: $\frac{|b|}{2\pi}$ or $\frac{1}{\text{per}}$

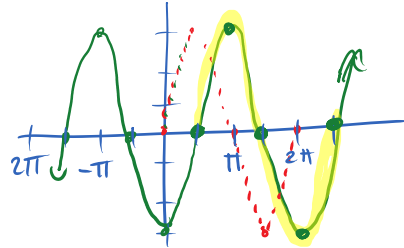
Shifts: h, K

(1) $y = \sin x + 4$



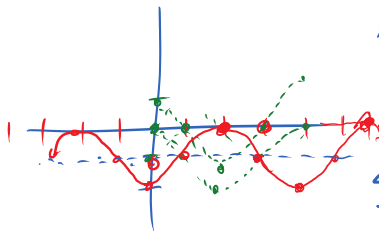
Amp: 1
Per: 2π
Freq: $\frac{1}{2\pi}$
Shift: up 4

(2) $y = 3 \sin(x - \frac{\pi}{2})$



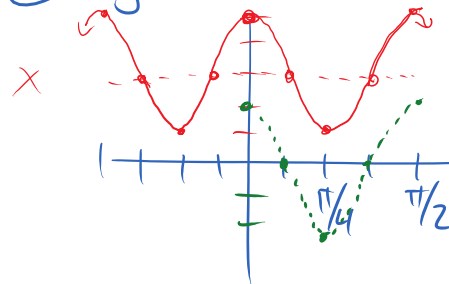
Amp: 3
Per: 2π
Freq: $\frac{1}{2\pi}$
Shift: right $\frac{\pi}{2}$

(3) $y = \cos(x - \pi) - 1$



Amp: 1
Per: 2π
Freq: $\frac{1}{2\pi}$
Shifts: π to the right
Down 1

(4) $y = 2 \cos(4x) + 3$



Amp = 2
Per: $\frac{\pi}{2}$
Freq = $\frac{4}{2\pi}$