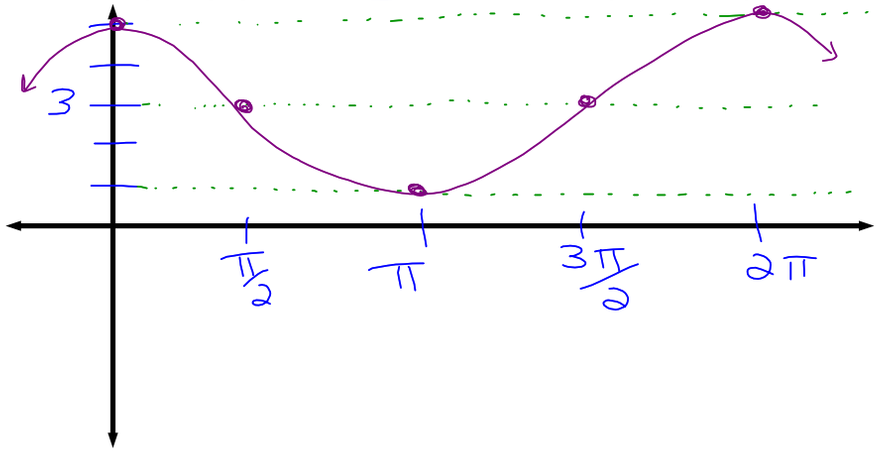
Translations of Trig Functions

We work with $\sin\theta$, $\cos\theta$ only

Vertical Stretches/Compressions and Vertical Shifts

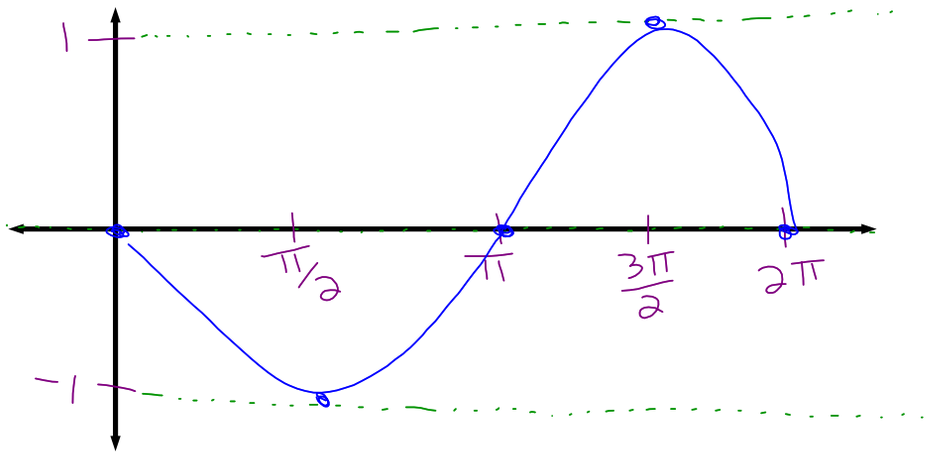
ex 1) $f(x) = 2\cos x + 3$ $\quad (-\infty, \infty)$



1) Find the new period and label (B)
2) Draw the sinusoidal axis (D)
3) Draw the max/min from amplitude (A)
4) Plots points with any shifts (C)

Horizontal Shifts

ex 2) $y = \sin(\theta + \pi)$ $\quad [0, 2\pi]$



1) Period 2π

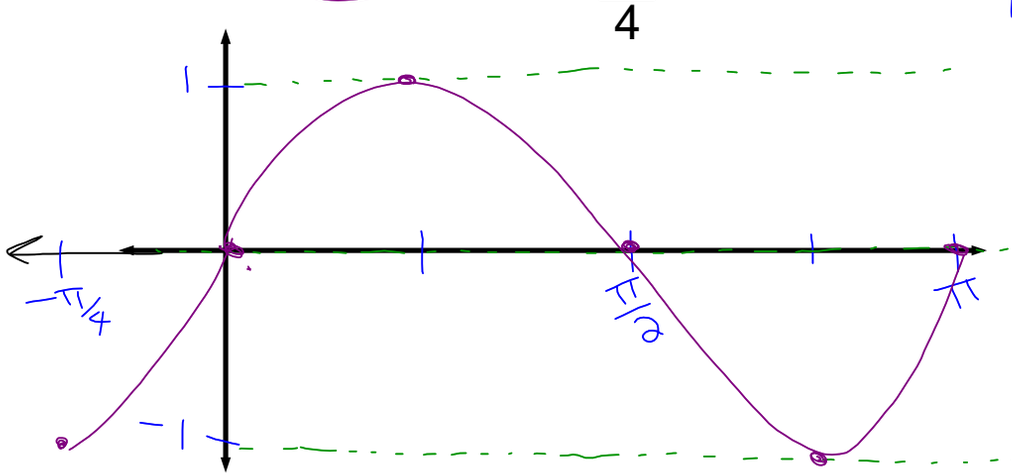
2) Axis $y = 0$

3) amp = 1

4) π left (2 spaces)

Horizontal Stretches/Compressions

ex 3) $f(x) = \sin(2x)$ $\quad [-\frac{\pi}{4}, \pi]$



new period

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

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

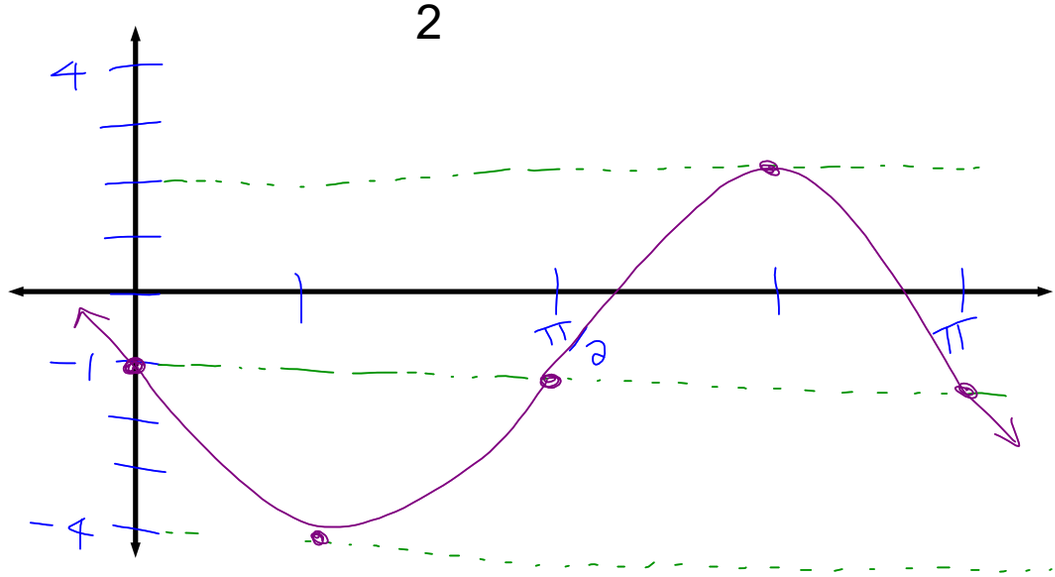
2) axis $y = 0$

3) amp $= 1$

4) $C = 0$

ex 4) $y = 3\sin 2\left(x + \frac{\pi}{2}\right) - 1$ $\quad \{x \mid x \in R\}$

a b c d



Period

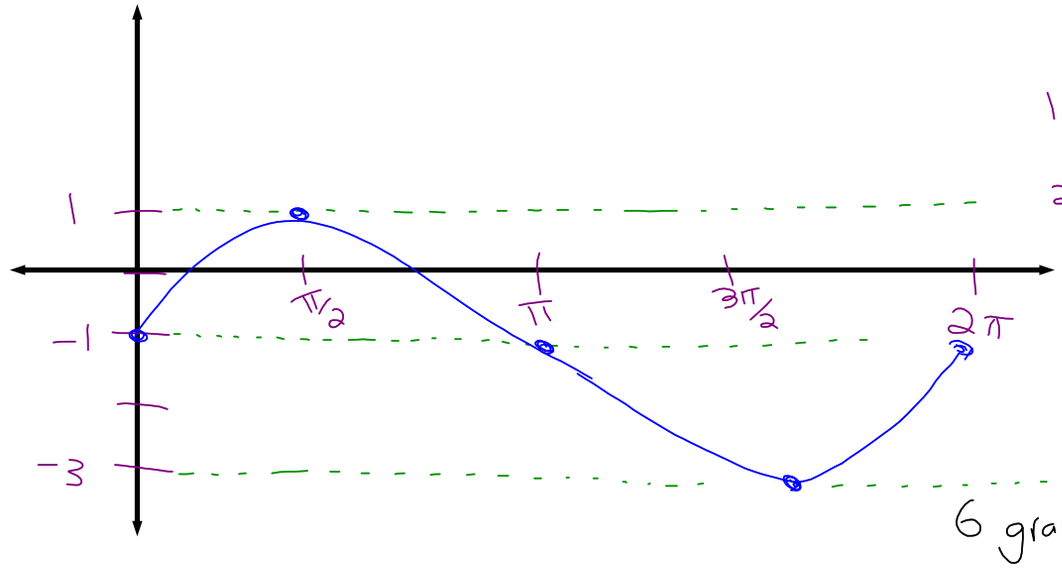
1) $\frac{2\pi}{2} = \pi$

2) axis $y = -1$

3) amp 3

4) $\pi/2$ left (2 spaces)

ex 5) $y = 2\cos(x - \frac{\pi}{2}) - 1$ at least one period



1) period 2π

2) $d = -1$ Axis

3) $a = 2$ amp

4) $\pi/2$ right (1 spare)

6 graphs ws