Graphing Sinusoidal Functions

PC 12 **Graphing Sinusoidal Functions - Notes**

Sketch the graph of each function for $-2\pi \le x \le 2\pi$.

positive cosine: start at a max

1. $y = 2\cos(2x) - 1$

amplitude: 2

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

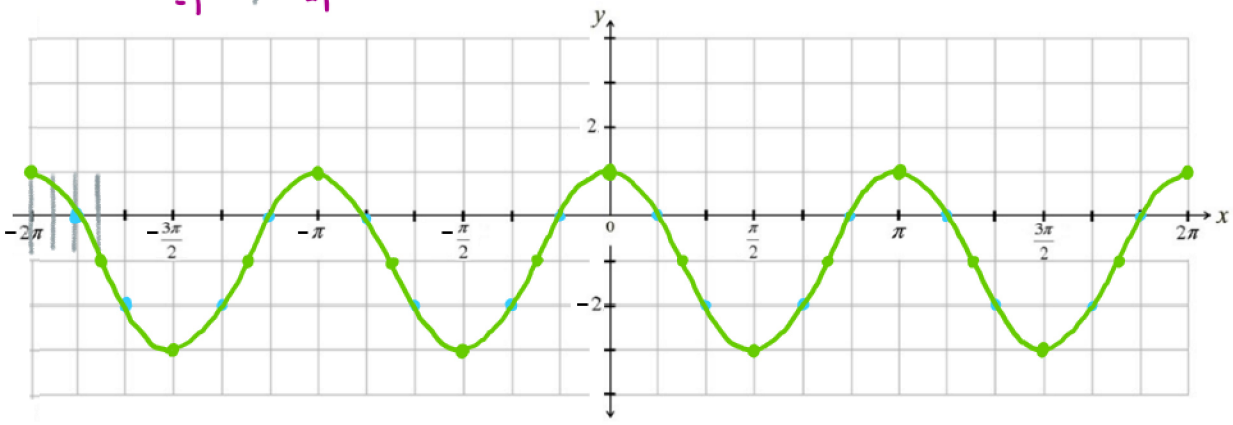
range: $-3 \le y \le 1$

$-2 \le y \le 2$

$-1 \quad -1$

phase shift: none

↳ start on y-axis



negative sine: start on centre line and move down

2. $y = -3\sin\left(x + \frac{\pi}{6}\right)$

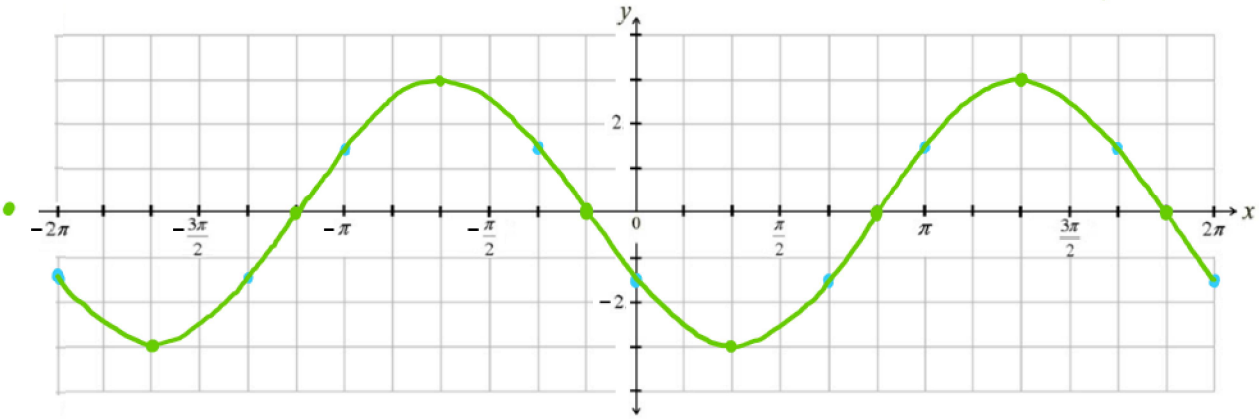
amplitude: 3

period: 2π

range: $-3 \le y \le 3$

phase shift: $-\frac{\pi}{6}$

↳ starting point



start on centre line and move up

3. $y = sin\left(2\left(x + \frac{2\pi}{3}\right)\right) + 1$

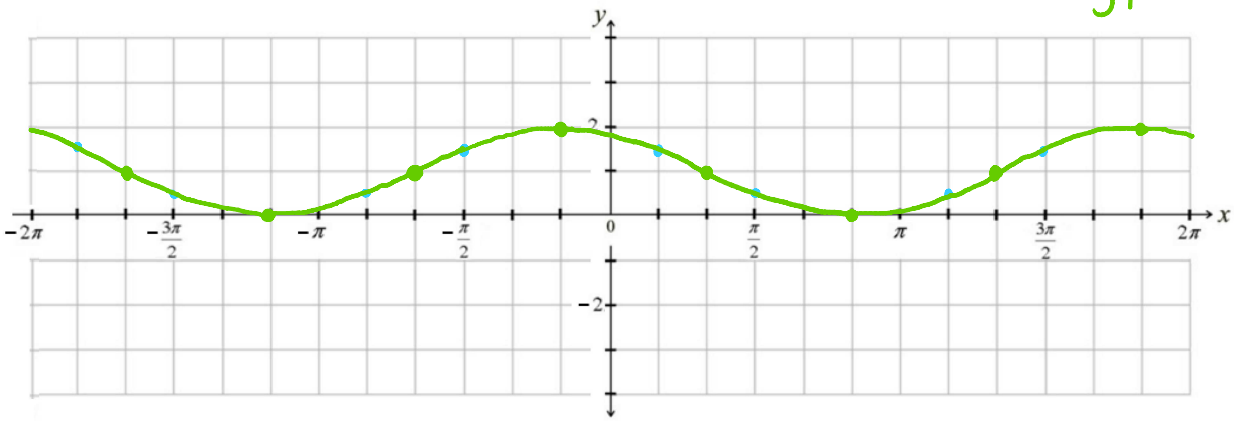
amplitude: 1

period: π

range: $0 \leq y \leq 2$

phase shift: $-\frac{2\pi}{3}$

↑ starting point



negative cosine: start at a min

$\frac{1}{2}(x - \frac{\pi}{3})$

4. $y = -3\,cos\left(\frac{x}{2} - \frac{\pi}{6}\right) + 1$ *factor the coefficient of x to determine the phase shift

amplitude: 3

period: $\frac{2\pi}{1/2} = 4\pi$

range: $-2 \leq y \leq 4$

$-3 \leq y \leq 3$

$+1 \quad +1$

phase shift: $\frac{\pi}{3}$