1. Using you Calculator or IPAD (Graph Calc HD) plot and **sketch** the following functions for $-2\pi \le x \le 2\pi$.

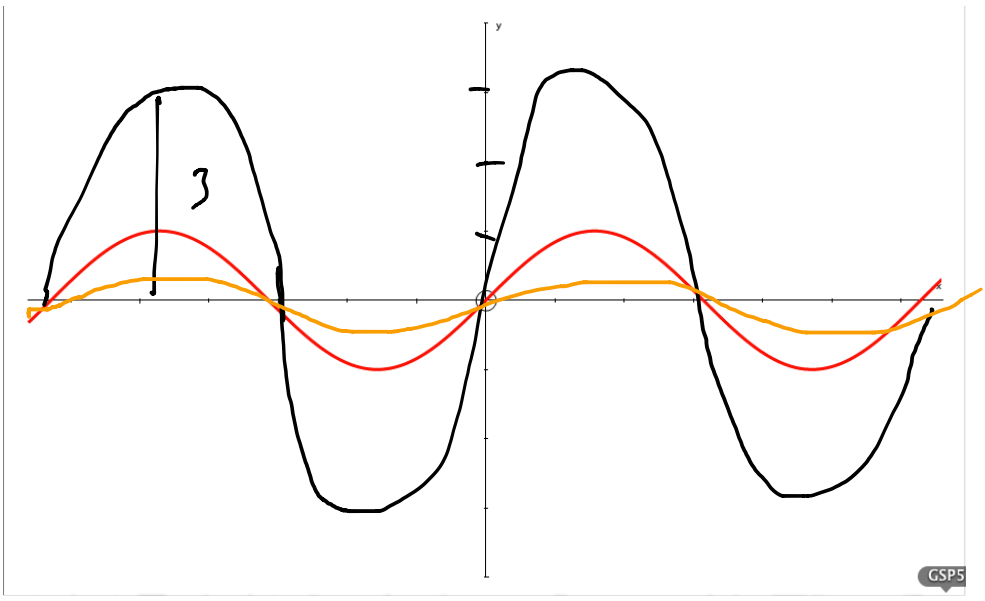
$y = \sin x$ has already been plotted for you.

A.

$y = \sin x$

$y = 3\sin x$

$y = 0.5\sin x$



B.

$y = \sin(x)$

$y = \sin(3x)$

$y = \sin\left(\frac{1}{3}x\right)$

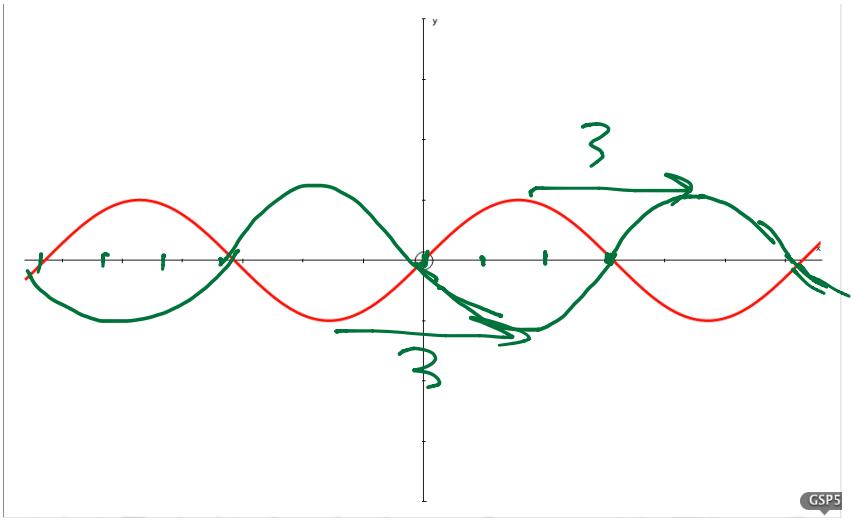
$P = \frac{2\pi}{3}$

$P = \frac{2\pi}{1/3} = 6\pi$

c.)

$y = \sin x$

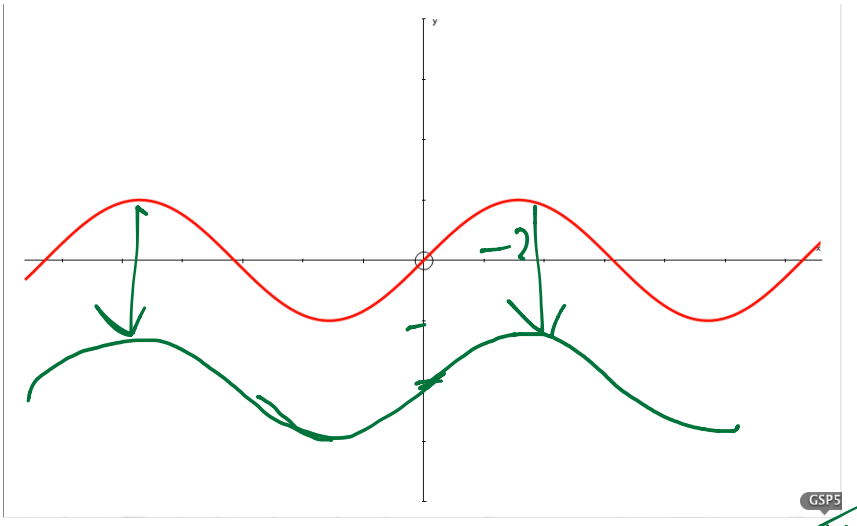
$y = \sin(x - 3)$



d.)

$y = \sin x$

$y = \sin x - 2$

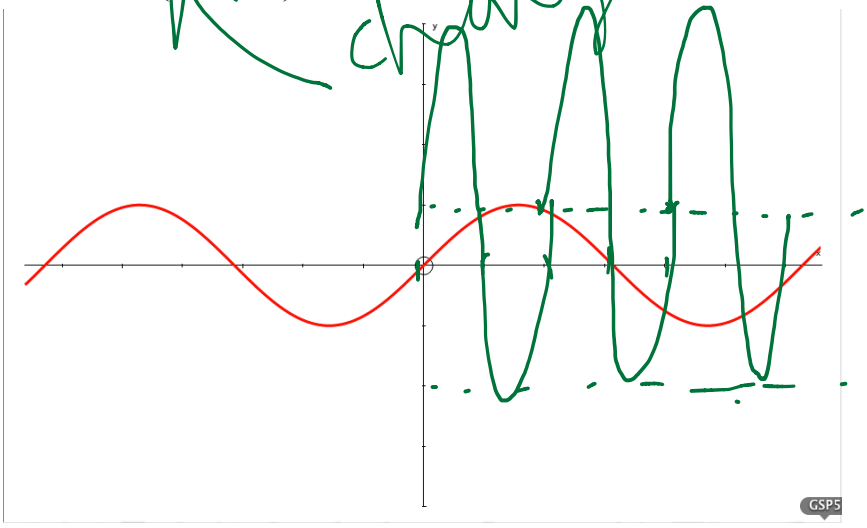


e.) $y = 3\sin\left(\frac{1}{2}(x-4)\right)+1$

change to π

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

$A = 3$ shift $= \begin{pmatrix} 4 \\ 1 \end{pmatrix}$



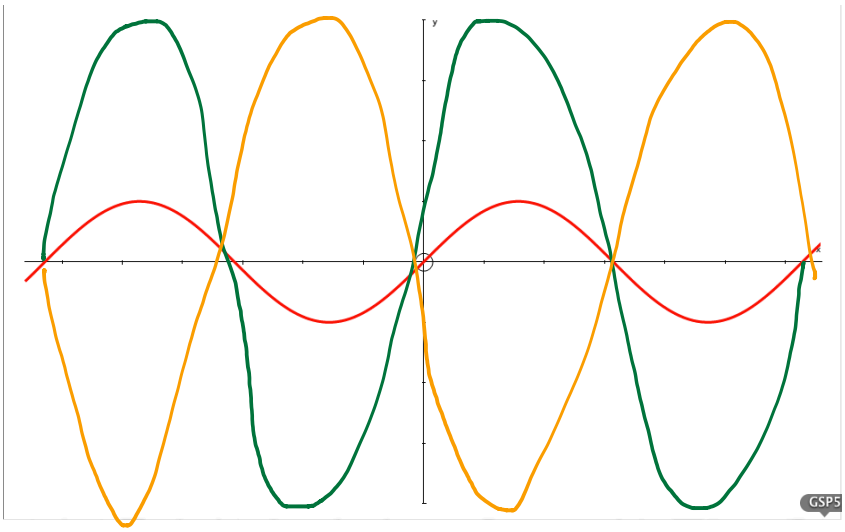
2. Now try to sketch the following functions WITHOUT the use of technology:

a.)

$y = \sin x$

$y = 4\sin x$

$y = -4\sin x$

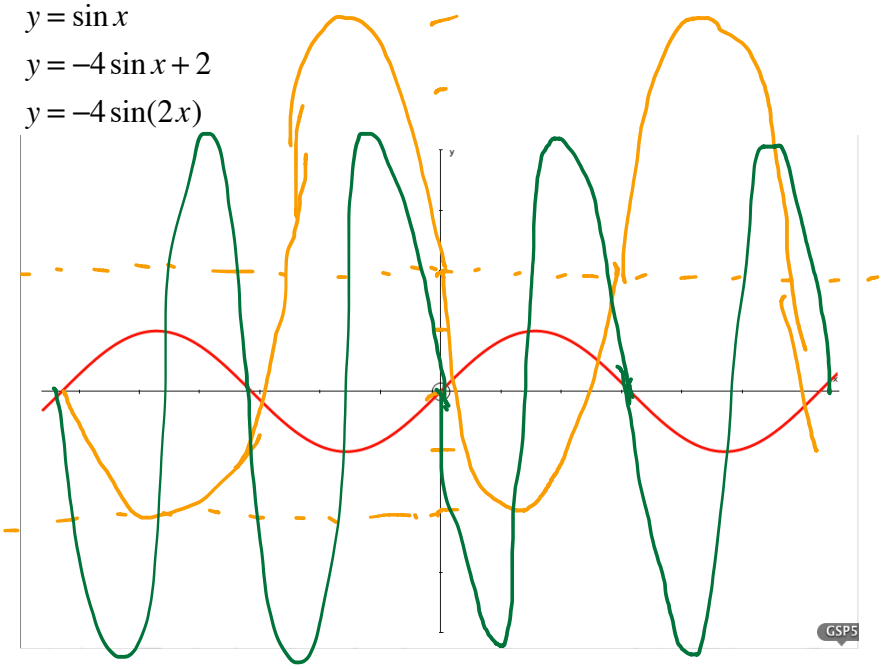


b.)

$y = \sin x$

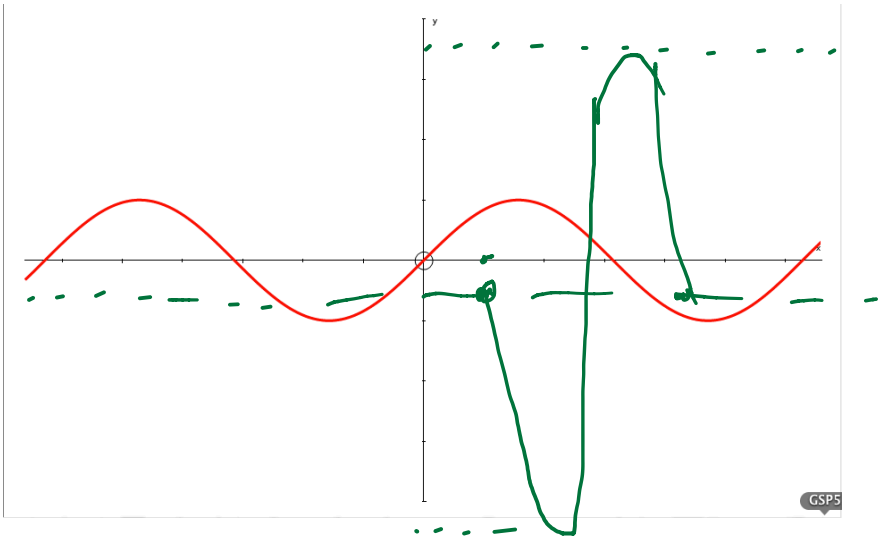
$y = -4\sin x + 2$

$y = -4\sin(2x)$



$p = \frac{2\pi}{2} = \pi.$

c.) $y = -4\sin\left(2(x-1)\right) - 0.5$

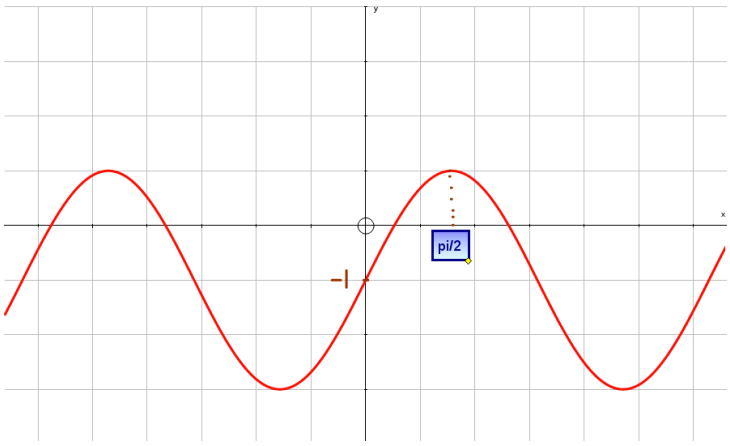


$A = -4$

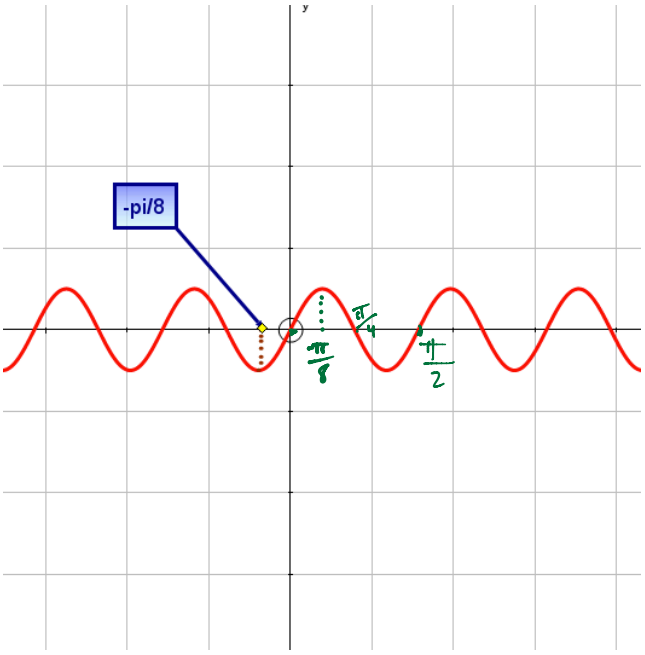
$p = \frac{2\pi}{2} = \pi$

shift $\begin{pmatrix} 1 \\ -0.5 \end{pmatrix}$

3. Given the graph of the sine function below, write the equation:



$\therefore\ y = 2\sin x - 1$

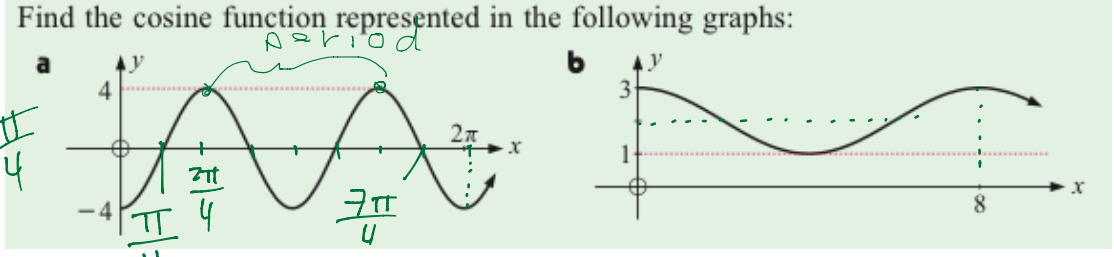


$\therefore\ A = 0.5$

$P = \frac{2\pi}{B}$ or $B = \frac{2\pi}{\pi/2} = 4$

so $y = 0.5\sin(4x)$

Find the cosine function represented in the following graphs:



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

and $B = 2$

So $y = -4\cos(2x)$

or $y = 4\cos\left(2\left(x - \frac{\pi}{2}\right)\right)$

$\therefore\ B = \frac{2\pi}{8} = \frac{\pi}{4}$

$A = 1$

shift $\uparrow$ 2

$\therefore\ y = \cos\left(\frac{\pi}{4}x\right) + 2$