Graph of Equations

1 Trig function transformations

Assume...

a: Vertical stretch/shrink

b: Horizontal stretch/shrink

c: Horizontal "phase" shift

d: Vertical shift

$$y = d + a * sin(bx - c) \tag{1}$$

Example...

A sine curve with a period π, amplitude of 2, right phrase of $\frac{\pi}{2}$, and a vertical shift down 4
a is derived from amplitude, positive if reflection is not specified, $a = 2$
d is derived from vertical shift, $d = -4$

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

$$c = b * \text{shift} = 2 * \frac{\pi}{2} = \pi$$

Then you put it all together...

$$y = -4 + 2 * \sin(2x - \pi)$$

Pure equations...

$$a = \text{amplitude}$$
$$b = \frac{2\pi}{\text{period}}$$
$$c = 2 * \text{phase shift}$$
$$d = \text{vert shift}$$