

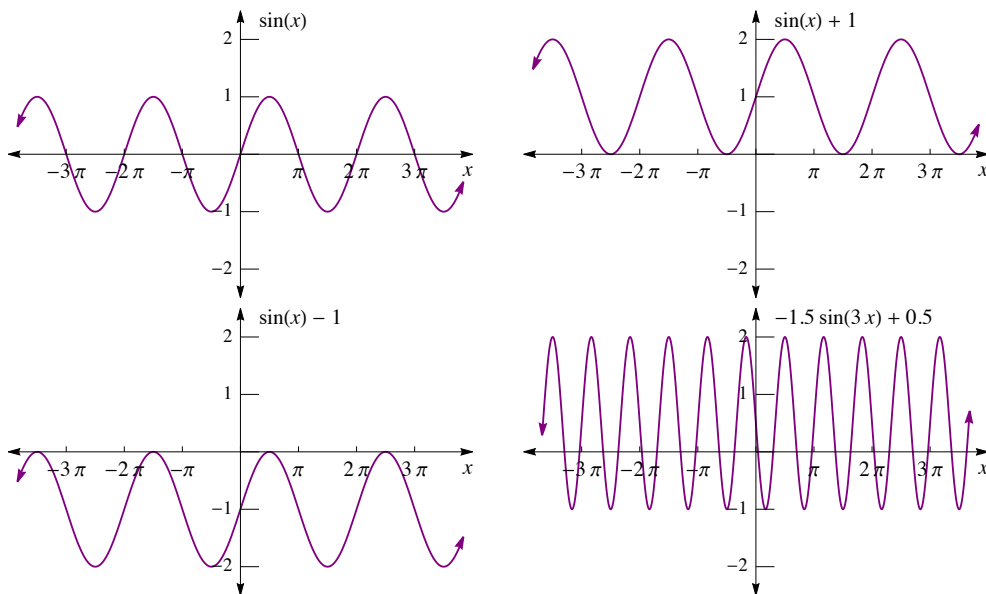
Trigonometry 31: Sin and Cos: Vertical Shift

A very general way of writing the sine and cosine functions is:

$$y = a \sin(bx - c) + k$$

$$y = a \cos(bx - c) + k$$

As we have seen, when a constant, such as k is added to a function, the function is translated up k units if k is positive and is translated down k units if k is negative. In trigonometry, such translations are called **vertical shifts**. Here are some graphs of the sine function with vertical shifts



A similar pattern is seen with the cosine function:

