Example 0.1. Shifted Function: A function viewed in a fixed coordinate x is centered at zero $f(x-0) = f(x) = 1+x^2$, and shifted to any center at $x=z$ according to $f(x-z) = 1+(x-z)^2$. Therefore the shifted $f(x-z=0) = f(x=z) = 1+(z-z)^2 = 1$ evaluated at the center $x=z$ gives the same function value as the unshifted $f(x=0) = 1+x^2 = 1$ centered at $x=0$. Notice the two functions are indistinguishable when given a dummy variable $y = x-z$ and evaluate in separate coordinates, so $f(y) = 1+y^2$ is essentially the same as $f(x)$. Hence, only if viewed in the same x coordinate will we mention the "shifted function".

Example 0.2. Reflected Function (Asymmetric): A function centered at zero $f(x) = x-1$ being reflected gives $f(-x) = -x-1$, where simply plugging in $x=1$ will give the corresponding function values for the unreflected $f(1) = 0$ which is not equal to the reflected $f(-1) = -2$. But, the reflected $x=-1$ at $f(-x)$ gives the same function value as $x=1$ at $f(x)$.

Example 0.3. Reflected Function (Symmetric): The function centered at zero $f(x) = x^2$ being reflected gives $f(-x) = x^2$ implies $f(x) = f(-x)$.

Example 0.4. Shifted Reflected Function (Asymmetric): $f(x) = x-1 \to f(2-x) = f(-(x-2)) = 1-x$ is centered at $x=2$ and reflected (Figure 1).

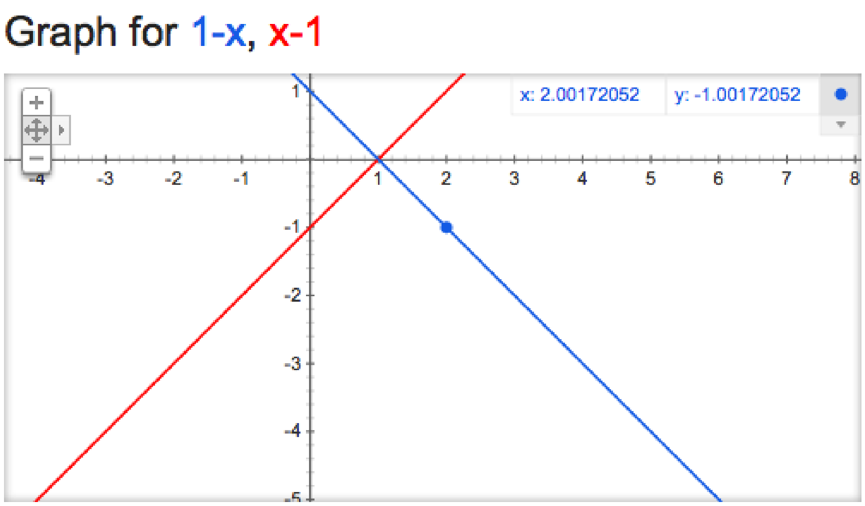

Figure 1