1.8 New Functions From Old

Example 1. Let \( f(x) = 3x - 2 \) and let \( g(x) = x^2 + x \). Find the following functions:

(a) \( f(x) + g(x) \)
(b) \( f(x)g(x) \)
(c) \( f(x)/g(x) \)
(d) \( f(g(x)) \)
(e) \( g(f(x)) \).
Example 2. Let $f(x) = e^x$ and $g(x) = x^2$. Find:
(a) $f(g(1))$,
(b) $g(f(1))$,
(c) $f(g(x))$. 
Example 3. Let $f(x) = x^2 - 1$. In each case start by finding the formula for the indicated function, and then figure out what the graph looks like (using your calculator or what you know about graphs of parabolas). Afterwards describe the graph geometrically as it compares to the original graph of $x^2 - 1$.

(a) $f(x) + 2$.
(b) $f(x + 2)$.
(c) $f(x - 2)$.
(d) $2f(x)$.
(e) $f(2x)$. 