

Exercises

1. Describe how the graphs of two functions, $f(x)$ and $g(x)$, can be added.

2. Describe how the graphs of two functions, $f(x)$ and $g(x)$, can be multiplied.

3. If $f(x) = 3x + 2$ and $g(x) = 6x$, find:

(a) $(f - g)(x)$

(b) $(f + g)(x)$

(c) $(f \cdot g)(x)$

(d) $(g - f)(x)$

4. If $f(x) = x + 4$, $g(x) = x^2$, and $h(x) = 5x$, find:

(a) $(h \cdot f)(x)$

(b) $g(x) - (f \cdot h)(x)$

(c) $(f \cdot h)(x) - g(x)$

(d) $(f \cdot g)(x) + h(x)$

(e) $(g \cdot h)(x) - (g \cdot f)(x)$

5. If $f(x) = 4x + 1$, $g(x) = x^2$, and $h(x) = 3x$, find:

(a) $h(f(x))$

(b) $f(h(x))$

(c) $g(f(x))$

(d) $f(g(x))$

(e) $h(g(x)) - f(g(x))$

(f) $f(f(x))$

(g) $h(h(x))$

(h) $g(h(x)) + h(g(x))$

6. Sketch the graphs of $f(x) = 2x - 2$, $g(x) = x + 1$, and $(f \cdot g)(x)$.