Problem 1 *Consider the functions* $f(x) = -3(x+2)^3$ *and* $g(x) = -2x$. *Compute the following:*

- $(f+g)(x) = \boxed{-3(x+2)^3 - 2x}$
- $(f-g)(x) = \boxed{-3(x+2)^3 + 2x}$
- $(fg)(x) = \boxed{6(x+2)^3 x}$
- $\left(\frac{f}{g}\right)(x) = \boxed{\frac{3(x+2)^3}{2x}}$

Feedback(*`attempt`*): *This section does not require that you simplify the function. Although it is good practice to do so, if you are having trouble getting the correct answer try plugging in the unsimplified version to make sure you have the right function.*

Problem 2 *Consider the functions* $f(x) = 3x + 3$ *and* $g(x) = 2(x+3)^2$. *Compute the following:*

- $(f+g)(x) = \boxed{2(x+3)^2 + 3x + 3}$
- $(f-g)(x) = \boxed{-2(x+3)^2 + 3x + 3}$
- $(fg)(x) = \boxed{6(x+3)^2(x+1)}$
- $\left(\frac{f}{g}\right)(x) = \boxed{\frac{3(x+1)}{2(x+3)^2}}$

Feedback(*`attempt`*): *This section does not require that you simplify the function. Although it is good practice to do so, if you are having trouble getting the correct answer try plugging in the unsimplified version to make sure you have the right function.*

Problem 3 *Consider the functions* $f(x) = 3(x-2)^3$ *and* $g(x) = -2(x-4)^3$. *Compute the following:*

- $(f+g)(x) = \boxed{3(x-2)^3 - 2(x-4)^3}$
- $(f-g)(x) = \boxed{3(x-2)^3 + 2(x-4)^3}$

- $(fg)(x) = \boxed{-6(x-2)^3(x-4)^3}$
- $\left(\frac{f}{g}\right)(x) = \boxed{-\frac{3(x-2)^3}{2(x-4)^3}}$

Feedback(attempt): *This section does not require that you simplify the function. Although it is good practice to do so, if you are having trouble getting the correct answer try plugging in the unsimplified version to make sure you have the right function.*

Problem 4 *Consider the functions* $f(x) = -4x + 12$ *and* $g(x) = -3(x+2)^3$. *Compute the following:*

- $(f+g)(x) = \boxed{-3(x+2)^3 - 4x + 12}$
- $(f-g)(x) = \boxed{3(x+2)^3 - 4x + 12}$
- $(fg)(x) = \boxed{12(x+2)^3(x-3)}$
- $\left(\frac{f}{g}\right)(x) = \boxed{\frac{4(x-3)}{3(x+2)^3}}$

Feedback(attempt): *This section does not require that you simplify the function. Although it is good practice to do so, if you are having trouble getting the correct answer try plugging in the unsimplified version to make sure you have the right function.*
