Problem 1 *Consider the following functions:* $f(x) = -5\,e^{(x-3)}$ *and* $g(x) = -\sqrt{x-5}$. *Compute:*

$f(g(x)) =$ $\boxed{-5\,e^{\left(-\sqrt{x-5}-3\right)}}$

$g(f(x)) =$ $\boxed{-\sqrt{-5\,e^{(x-3)}-5}}$

$(f \circ g)(x) =$ $\boxed{-5\,e^{\left(-\sqrt{x-5}-3\right)}}$

$((g \circ f)(x) =$ $\boxed{-\sqrt{-5\,e^{(x-3)}-5}}$

Feedback(*`attempt`*): *You only need to compose the functions you do* ***not*** *need to simplify them. For example, if* $f(x) = 13x^2 + x$ *and* $g(x) = \sqrt{x+1}$ *then for* $f(g(x))$ *you would just copy in the "*$g(x)$*" wherever there is an "*x*" in* $f(x)$ *and leave it like that; i.e. you would input "*$13(\sqrt{x+1})^2 + \sqrt{x+1}$. *No need to simplify, reduce, or do anything else!*

Problem 2 *Consider the following functions:* $f(x) = -5\sqrt{x+3}$ *and* $g(x) = -4\log(|x-4|)$. *Compute:*

$f(g(x)) =$ $\boxed{-5\sqrt{-4\log(|x-4|)+3}}$

$g(f(x)) =$ $\boxed{-4\log\left(\left|-5\sqrt{x+3}-4\right|\right)}$

$(f \circ g)(x) =$ $\boxed{-5\sqrt{-4\log(|x-4|)+3}}$

$((g \circ f)(x) =$ $\boxed{-4\log\left(\left|-5\sqrt{x+3}-4\right|\right)}$

Feedback(*`attempt`*): *You only need to compose the functions you do* ***not*** *need to simplify them. For example, if* $f(x) = 13x^2 + x$ *and* $g(x) = \sqrt{x+1}$ *then for* $f(g(x))$ *you would just copy in the "*$g(x)$*" wherever there is an "*x*" in* $f(x)$ *and leave it like that; i.e. you would input "*$13(\sqrt{x+1})^2 + \sqrt{x+1}$. *No need to simplify, reduce, or do anything else!*

Problem 3 *Consider the following functions:* $f(x) = 5\,e^{(x-2)}$ *and* $g(x) = -3\,(x-3)^3$. *Compute:*

$f(g(x)) =$ $\boxed{5\,e^{\left(-3\,(x-3)^3-2\right)}}$

$g(f(x)) =$ $\boxed{-3\left(5\,e^{(x-2)}-3\right)^3}$

$(f \circ g)(x) =$ $\boxed{5\,e^{\left(-3\,(x-3)^3-2\right)}}$

$((g \circ f)(x) =$ $\boxed{-3\left(5\,e^{(x-2)}-3\right)^3}$

Feedback(*`attempt`*): *You only need to compose the functions you do* ***not*** *need to simplify them. For example, if* $f(x) = 13x^2 + x$ *and* $g(x) = \sqrt{x+1}$ *then for* $f(g(x))$ *you would just copy in the "*$g(x)$*" wherever there is an "*x*" in* $f(x)$ *and leave it like that; i.e. you would input "*$13(\sqrt{x+1})^2 + \sqrt{x+1}$*. No need to simplify, reduce, or do anything else!*

Problem 4 *Consider the following functions:* $f(x) = -2\,\log(|x-2|)$ *and* $g(x) = 3\,x + 15$*. Compute:*

$f(g(x)) =$ $\boxed{-2\,\log(|3\,x+13|)}$

$g(f(x)) =$ $\boxed{-6\,\log(|x-2|)+15}$

$(f \circ g)(x) =$ $\boxed{-2\,\log(|3\,x+13|)}$

$((g \circ f)(x) =$ $\boxed{-6\,\log(|x-2|)+15}$

Feedback(*`attempt`*): *You only need to compose the functions you do* ***not*** *need to simplify them. For example, if* $f(x) = 13x^2 + x$ *and* $g(x) = \sqrt{x+1}$ *then for* $f(g(x))$ *you would just copy in the "*$g(x)$*" wherever there is an "*x*" in* $f(x)$ *and leave it like that; i.e. you would input "*$13(\sqrt{x+1})^2 + \sqrt{x+1}$*. No need to simplify, reduce, or do anything else!*
