

$$(f \circ g)(x) =$$

Domain issues: you must check the final functions AND the inside function for bad values (square roots & denominators)

1) Let $f(x) = 2x + 3$ and $g(x) = 4x^2$. Find the value of:

$(f \circ g)(5)$	$(g \circ f)(5)$	$f(f(5))$	$g(g(5))$
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2) Using the same functions as #1, find the composition and the domain of the composition function.

$f(g(x))$	$(g \circ f)(x)$	$(f \circ f)(x)$	$g(g(x))$
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* 3) Let $f(x) = \sqrt{x}$ and $g(x) = x - 1$. Find the composition and the domain of the composition function.

$(g \circ g)(x)$	$g(f(x))$	$(f \circ f)(x)$	$f(g(x))$
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4) Let $f(x) = \frac{2}{x-1}$ and $g(x) = \frac{3}{x}$. Find the composition and the domain of the composition function.

$(f \circ g)(x)$	$(g \circ f)(x)$
$(g \circ g)(x)$	$(f \circ f)(x)$

5* 6) Given $h(x)$, find functions f and g such that $f \circ g = h$

$h(x) = (2x - 5)^3$	$h(x) = \sqrt{5x^2 + 3}$	$h(x) = \frac{1}{2x - 3}$	$h(x) = 2 x+3 - 4$
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3. $f(x) = \sqrt{x}$

$g(x) = x - 1$

* The domain of $f(g(x))$ is the _____ such that _____ is in the domain of _____ in the domain of g .

5. $f(x) = x^2 - 9$

$g(x) = \sqrt{9 - x^2}$