

Name: KEY

Section 2.3 – Composite FunctionsGiven: $f(x) = 3x + 5$ and $g(x) = x^2 - 7x - 8$

Find:

$(f \circ g)(x)$	$(g \circ f)(x)$
$f(g(x))$ $3(x^2 - 7x - 8) + 5$ $3x^2 - 21x - 24 + 5$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">$3x^2 - 21x - 19$</div>	$g(f(x))$ $(3x+5)^2 - 7(3x+5) - 8$ $(3x+5)(3x+5) - 21x - 35 - 8$ $9x^2 + 30x + 25 - 21x - 43$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">$9x^2 + 9x - 18$</div>

Given: $f(x) = -x^2 + 5$ and $g(x) = \frac{1}{x}$

Find the desired Composite Functions and State the Domain:

$(f \circ g)(x)$	$(g \circ f)(x)$
$-\left(\frac{1}{x}\right)^2 + 5$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">$-\frac{1}{x^2} + 5$ or $-x^{-2} + 5$</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">$D: x \neq 0$</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">$\frac{1}{-x^2 + 5}$</div> $-x^2 + 5 \neq 0$ $-x^2 = -5 \rightarrow x^2 = 5$ $x = \pm\sqrt{5}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">$D: x \neq \pm\sqrt{5}$</div>