

Calculus 1 3 Notes Function Operations and Composition

Lesson 254 | Calculus AB | Functions, composition and piecewise rules

<https://www.youtube.com/watch?v=trzNky5Ot4I>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Let $f(x) = 8x + 3$ for $x < -8$, and $f(x) = x^2 + 2$ for $x \geq -8$. Find $f(-9)$, $f(-8)$, and $f(-7)$.

02

Let $f(x) = 6x + 5$ and $g(x) = x^2 - 14$. Find $(f \circ g)(x)$ and $(g \circ f)(2)$.

03

Let $f(x) = 14x + 8$ and $g(x) = x^2 - 3$. Find $(f \circ g)(x)$ and $(g \circ f)(6)$.

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04

Let $f(x) = 6x + 7$ for $x < -9$, and $f(x) = x^2 + 10$ for $x \geq -9$. Find $f(-10)$, $f(-9)$, and $f(-8)$.

05

Let $f(x) = 9x + 4$ and $g(x) = x^2 - 5$. Find $(f \circ g)(x)$ and $(g \circ f)(7)$.

06

Let $f(x) = 4x + 12$ and $g(x) = x^2 - 2$. Find $(f \circ g)(x)$ and $(g \circ f)(5)$.

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01

Let $f(x) = 8x + 3$ for $x < -8$, and $f(x) = x^2 + 2$ for $x \geq -8$. Find $f(-9)$, $f(-8)$, and $f(-7)$.

Choose the rule from the input interval: $f(-9) = -69$; $f(-8) = 66$; $f(-7) = 51$. Equality uses the second rule.

02

Let $f(x) = 6x + 5$ and $g(x) = x^2 - 14$. Find $(f \circ g)(x)$ and $(g \circ f)(2)$.

$f(g(x)) = 6(x^2 - 14) + 5 = 6 \cdot x^2 - 79$. $f(2) = 17$, so $g(f(2)) = 275$.

03

Let $f(x) = 14x + 8$ and $g(x) = x^2 - 3$. Find $(f \circ g)(x)$ and $(g \circ f)(6)$.

$f(g(x)) = 14(x^2 - 3) + 8 = 14 \cdot x^2 - 34$. $f(6) = 92$, so $g(f(6)) = 8461$.

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04

Let $f(x) = 6x + 7$ for $x < -9$, and $f(x) = x^2 + 10$ for $x \geq -9$. Find $f(-10)$, $f(-9)$, and $f(-8)$.

Choose the rule from the input interval: $f(-10) = -53$; $f(-9) = 91$; $f(-8) = 74$. Equality uses the second rule.

05

Let $f(x) = 9x + 4$ and $g(x) = x^2 - 5$. Find $(f \circ g)(x)$ and $(g \circ f)(7)$.

$f(g(x)) = 9(x^2 - 5) + 4 = 9x^2 - 41$. $f(7) = 67$, so $g(f(7)) = 4484$.

06

Let $f(x) = 4x + 12$ and $g(x) = x^2 - 2$. Find $(f \circ g)(x)$ and $(g \circ f)(5)$.

$f(g(x)) = 4(x^2 - 2) + 12 = 4x^2 + 4$. $f(5) = 32$, so $g(f(5)) = 1022$.