# Watch. Practice. Understand. | Lesson 254

## Calculus 1 3 Notes Function Operations and Composition

Watch the matching video: https://www.youtube.com/watch?v=trzNky5Ot4I

Practice focus: Functions, composition and piecewise rules

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

**01** For $f(x) = x^2 - 3x$, find $f(-2)$.

**02** If $f(x) = 2x + 1$ and $g(x) = x^2$, find $f(g(3))$ and $g(f(3))$.

**03** For $f(x) = x + 2$ when $x < 1$, and $f(x) = x^2$ when $x >= 1$, find $f(0)$, $f(1)$, $f(2)$.

**04** Find the domain of $f(x) = \sqrt{(x - 2)/(x - 5)}$.

# Worked answers | Lesson 254

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Practice focus: Functions, composition and piecewise rules

Original extra practice matched to the listed lesson topic.

**01** For $f(x) = x^2 - 3x$, find $f(-2)$.

$f(-2) = 4 + 6 = 10$.

**02** If $f(x) = 2x + 1$ and $g(x) = x^2$, find $f(g(3))$ and $g(f(3))$.

$g(3) = 9$, so $f(9) = 19$. $f(3) = 7$, so $g(7) = 49$.

**03** For $f(x) = x + 2$ when $x < 1$, and $f(x) = x^2$ when $x >= 1$, find $f(0)$, $f(1)$, $f(2)$.

Use the first rule at 0 and the second at 1 and 2: 2, 1, 4.

**04** Find the domain of $f(x) = \sqrt{(x - 2)}/(x - 5)$.

Require $x >= 2$ for the radical and $x != 5$ for the denominator. Domain: [2, 5) union (5, infinity).