

AP Precalculus

Composite Functions

Composite Functions | APPC-U02-P11

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus

Across 96 tasks this topic asks for formulas and domains, rules and domains, rules and equality set, commutation conclusion on listed set, both composites and both ordered compositions.

8 PDFs and a README; 110 buyer pages.

AP Precalculus

Composite Functions

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Read the inner table first and evaluate $f(g(0))$. For the answer bank, record the complete response required by the original task; use the given context to distinguish responses that share a numerical value.
Given input: 0

input	f(input)
-4	10
1	-2
5	7

input	g(input)
-2	5
0	1
3	-4

Bank label: _____

Use the tables to compare the two composition orders at $x = 1$. For the answer bank, record the complete response required by the original task; use the given context to distinguish responses that share a numerical value.

Given input: 1

input	f(input)
1	3
2	4
3	2
4	1

input	g(input)
1	2
2	1
3	4
4	3

Bank label: _____

AP Precalculus

Composite Functions

Name: _____ Date: _____ Class: _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

START

A tank fills according to $V(t)$, and its water depth is $d(V)$. Compose the models and state the physically allowed time domain. Use the complete final response to identify the next Match & Move card; show the reasoning required by the original task. The input condition is $0 \leq t \leq 30$ minutes. Report depth as a function of time and domain. Use depth model $d(V) = \frac{V}{120}$ centimeters. Use tank capacity 540 liters. Use volume model $V(t) = 18t$ liters.

Your response: _____

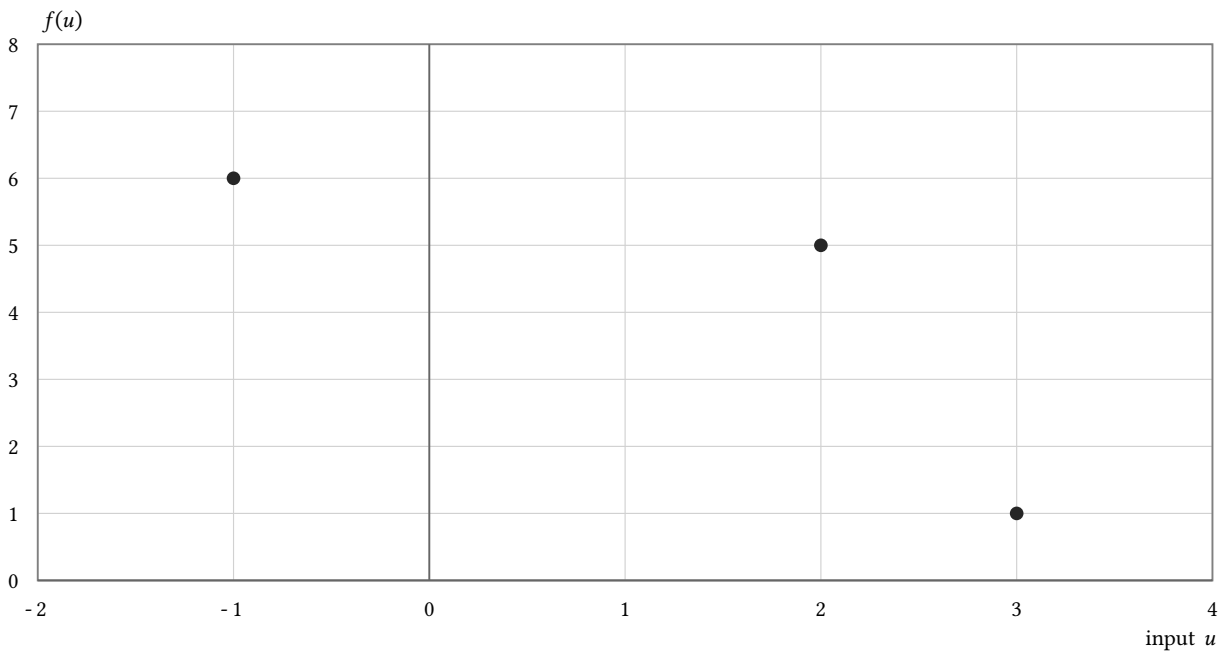
AP Precalculus

Composite Functions

Name: _____ Date: _____ Class: _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Use the table for g and the point-only graph for f to find $f(g(4))$. Student work: 4 Identify the precise mathematical error or omitted condition, then complete the original task and verify the correction from the supplied givens.



input	g(input)
1	3
2	−1
4	2

Composite Functions

Full Worked Solutions - excerpt

Worked example

Problem. Construct $f(g(x))$ without losing the inner restriction. The input condition is real x with nonnegative inner radicand. Report composite and domain. Use f rule $f(u) = 3u - 2$. Use g rule $g(x) = \sqrt{x + 4}$.

Answer. $f(g(x)) = 3\sqrt{x + 4} - 2$, with $x \geq -4$.

Explanation and check.

Substitute the radical for u ; its radicand controls the domain.

Worked example

Problem. Find the x -intervals for each branch of $f(x^2)$. The input condition is real x . Report piecewise composite on x . Use f rule $f(u) = u + 1$ if $u < 4$; $2u$ if $u \geq 4$. Use g rule $g(x) = x^2$.

Answer. $f(x^2) = x^2 + 1$ for $-2 < x < 2$, and $2x^2$ for $x \leq -2$ or $x \geq 2$.

Explanation and check.

The inner output is below 4 exactly when $x^2 < 4$; the threshold is visited on both sides.