

AP Precalculus Foundation Worksheet

8 original questions, working space and separate answer explanations. Version 2026-10-27.

Scope

Function reasoning foundations.

This is an untimed foundation study sample, not an official examination or complete mock test. Author-reviewed learning materials; independent educator review and learner calibration remain pending.

How to use this worksheet

Work through the questions before opening the answer section. Write your calculation or the reason for your choice. After checking the explanation, return to the linked lesson for any unfamiliar distinction.

<https://openexam.site/exams/ap-precalculus/worksheets/>

QUESTION 1 / Function change and transformations

For $f(x)=x^2$, define $g(x)=f(x - 3) + 4$. What is $g(6)$?

- A. 7
- B. 9
- C. 49
- D. 13

Working / reasoning:

Item function-change-01-1 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/function-change/>

QUESTION 2 / Exponential growth and decay

A culture begins with 40 cells and triples each hour in a model. How many cells does the model predict after 3 hours?

- A. 120
- B. 1080
- C. 360
- D. 3240

Working / reasoning:

Item exponential-growth-01-2 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/exponential-growth/>

QUESTION 3 / Angles and the unit circle

Write 150 degrees as $k\pi$ radians. What is k ?

- A. $6/5$
- B. 150
- C. $5/6$
- D. $5/3$

Working / reasoning:

Item trig-foundations-01-3 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/trig-foundations/>

QUESTION 4 / Polynomial structure and end behavior

Let $P(x) = 6x^3 - 7x + 4$. What is $P(-2)$?

Your answer: _____

Working / reasoning:

Item polynomial-structure-01-4 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/polynomial-structure/>

QUESTION 5 / Logarithms as inverse questions

What is $\log_2(8)$?

- A. 6
- B. 8
- C. 3
- D. 4

Working / reasoning:

Item logarithmic-functions-01-1 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/logarithmic-functions/>

QUESTION 6 / Read a sinusoidal model

A sinusoidal height varies between 7 and 19. What is its amplitude?

Your answer: _____

Working / reasoning:

Item sinusoidal-models-01-4 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/sinusoidal-models/>

QUESTION 7 / Zeros, factors and remainders

What is the remainder when $P(x)=x^3 + 5x + 6$ is divided by $x-2$?

- A. 19
- B. 24
- C. 6
- D. 16

Working / reasoning:

Item polynomial-factors-01-3 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/polynomial-factors/>

QUESTION 8 / Compose and reverse functions

If $f(x)=6x+1$ and $g(x)=x^2$, what is $f(g(3))$?

Your answer: _____

Working / reasoning:

Item composition-inverses-01-4 | Lesson: <https://openexam.site/exams/ap-precalculus/learn/composition-inverses/>

AP Precalculus: Answers & Explanations

Compare the method or rule as well as the final answer. These explanations are study aids, not official scoring guidance.

QUESTION 1 / function-change-01-1

Answer: 13

1. The inner input is $6 - 3 = 3$.
2. The original function squares that input: $f(3)=9$.
3. Add the vertical shift 4: $g(6)=13$.

QUESTION 2 / exponential-growth-01-2

Answer: 1080

1. There are three one-hour growth intervals.
2. Multiply by 3 in each interval.
3. $40 \times 3 \times 3 \times 3 = 1080$.

QUESTION 3 / trig-foundations-01-3

Answer: $5/6$

1. A full 180 degrees corresponds to π radians.
2. The coefficient is $150/180$.
3. Reduce to $5/6$.

QUESTION 4 / polynomial-structure-01-4

Answer: -30

1. Cube the negative input before multiplying.
2. The terms are -48 , $+14$, and $+4$.
3. Adding gives -30 .

QUESTION 5 / logarithmic-functions-01-1

Answer: 3

1. The logarithm asks for an exponent on 2.
2. Check $2^3=8$.
3. The exponent, hence the logarithm, is 3.

QUESTION 6 / sinusoidal-models-01-4

Answer: 6

1. Amplitude is half the peak-to-trough distance.
2. The distance is $19-7=12$.
3. Half is 6.

QUESTION 7 / polynomial-factors-01-3

Answer: 24

1. Use the remainder theorem at $x=2$.
2. Compute $2^3+5(2)+6$.
3. The remainder is 24.

QUESTION 8 / composition-inverses-01-4

Answer: 55

1. Apply the inner function first: $g(3)=9$.
2. Apply f to 9: $6(9)+1$.
3. The result is 55.

References and scope notes

The questions and teaching explanations are original catalog materials. References support the selected concepts; they are not endorsements or a reproduced official examination bank.

AP Precalculus course and syllabus

<https://apcentral.collegeboard.org/courses/ap-precalculus>

Expanded foundation practice, not complete AP coverage or a calibrated AP score estimate.

276 MCQ and 124 numeric learning tasks; these are not formal 2027 MCQ/FRQ proportions.

Eight original written extensions use method-based self-assessment; not official AP scoring.

Six caption-grounded companions; some selected source evidence is reused for distinct original teaching. Full audiovisual and independent educator review pending.

Content version 2026-10-27. Source catalog SHA-256: 962282ad67b7eded09858222868bf409fe59231af648ff22f87ac3ad6ea86550

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