

Precalculus · Series, Binomial Theorem and an Introduction to Limits · Test Answer Key

Common Core A-APR.C.5, A-SSE.B.4, F-BF.A.2 · mathovore.fr

This precalculus sequences series test answer key gives the full solution and the scoring guide for each of the 8 test questions on series, binomial theorem and an introduction to limits.

Full worked solutions with a point-by-point scoring guide for the 20-point test. Award partial credit for correct setups even when a later arithmetic slip changes the final value.

Precalculus Common Core: A-APR.C.5 · A-SSE.B.4 · F-BF.A.2

Precalculus Sequences Series Test Answer Key: questions 1-5

Question 1: Sigma notation (2 points)

- a. Terms: $-1, 1, 3, 5, 7, 9$.
- b. Sum: **24**.

Scoring: 1 point for the six correct terms; 1 point for the correct sum.

Question 2: Arithmetic series (2 points)

- a. $d = -3$, $a_{20} = 14 + 19(-3) = \mathbf{-43}$
- b. $S_{20} = \frac{20(14 - 43)}{2} = 10(-29) = \mathbf{-290}$

Scoring: 1 point for each part; accept a correct method with one arithmetic slip for half credit on that part.

Question 3: Geometric series (3 points)

- a. $r = -3$: $S_7 = \frac{2(1 - (-3)^7)}{1 - (-3)} = \frac{2(2188)}{4} = \mathbf{1,094}$
- b. $r = 0.4$: $\frac{20}{1 - 0.4} = \mathbf{100/3}$
- c. $r = 1.25$ and $|r| \geq 1$, so the series **diverges** and has no sum.

Scoring: 1 point for each part; part (c) needs the ratio and the conclusion.

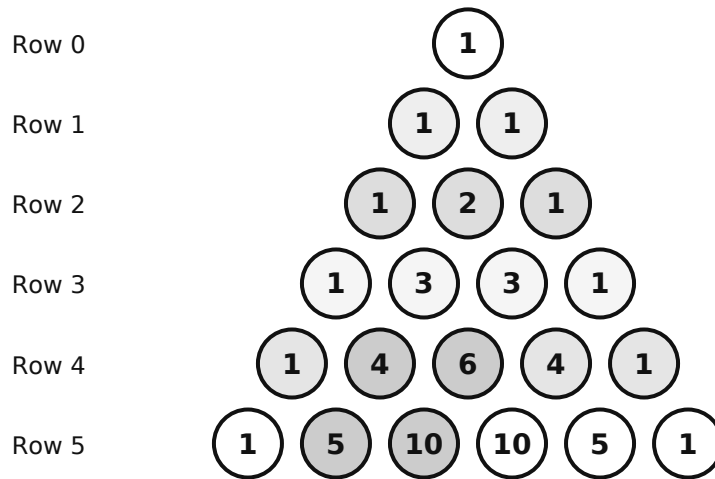
Question 4: Repeating decimal (2 points)

$$a_1 = 0.45, r = 0.01: \frac{0.45}{0.99} = \frac{45}{99} = \mathbf{5/11}$$

Scoring: 1 point for the series setup with correct a_1 and r ; 1 point for the simplified fraction.

Question 5: Binomial expansion (3 points)

Rows 4 and 5 are 1, 4, 6, 4, 1 and 1, 5, 10, 10, 5, 1.



Each entry is the sum of the two entries above it.

a. Missing entries: **4, 6, 5, 10.**

b. $x^4 + 4x^3(-2) + 6x^2(4) + 4x(-8) + 16 = x^4 - 8x^3 + 24x^2 - 32x + 16$

Scoring: 1 point for part (a); in part (b), 1 point for the correct coefficients 1, 4, 6, 4, 1 with powers of -2 and 1 point for the final polynomial with correct signs.

Precalculus Sequences Series Test Answer Key: questions 6-8

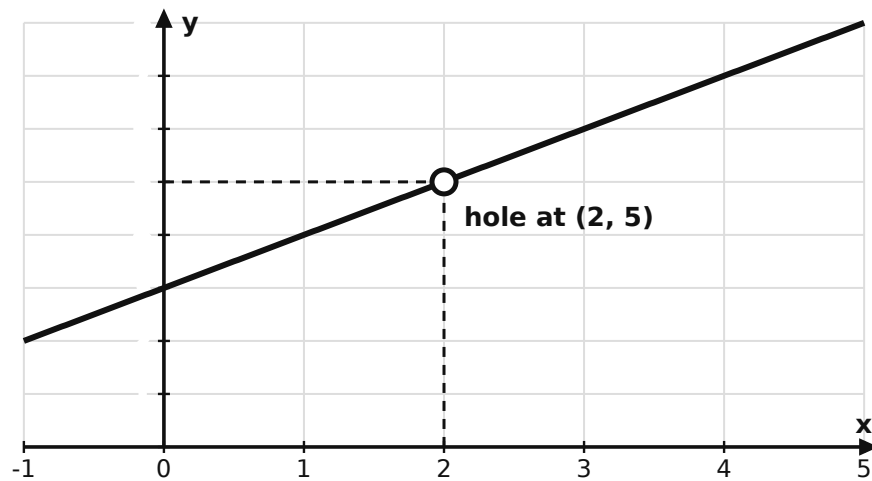
Question 6: Coefficient of a term (2 points)

The term is $C(9,4) x^4 2^5 = 126 \cdot 32 x^4$, so the coefficient is **4,032**.

Scoring: 1 point for $C(9,4) = 126$ and the power 2^5 ; 1 point for the product.

Question 7: Limits (3 points)

Factoring, $h(x) = \frac{(x+3)(x-2)}{x-2} = x+3$ for $x \neq 2$.



The open circle marks a point the graph skips.

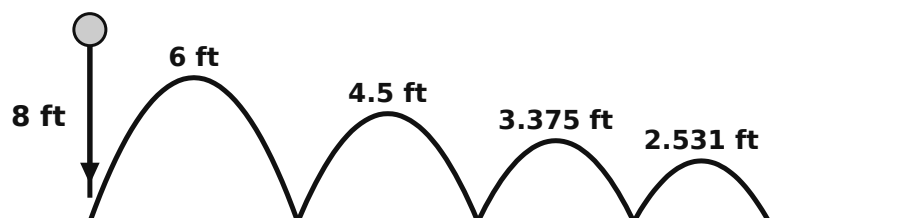
- 5**, the height of the hole.
- No**: substituting 2 gives $\frac{0}{0}$, so the graph has an open circle.
- $\frac{5-2/n}{1+1/n} \rightarrow \mathbf{5}$

Scoring: 1 point for each part.

Question 8: Bouncing ball (3 points)

Rebound heights 6, 4.5, 3.375, ... are geometric with $a_1 = 6$, $r = 0.75$.

Up and down: $2 \cdot \frac{6}{1-0.75} = 2 \cdot 24 = 48$. Total: $8 + 48 = \mathbf{56 \text{ feet}}$.



Each bounce rises to a fixed fraction of the previous height.

Scoring: 1 point for the ratio 0.75 and first rebound 6 ft; 1 point for the infinite sum 24; 1 point for doubling it and adding the initial 8 ft.

Scoring summary

Total
20 points: add the points of every question of this precalculus sequences series test answer key.

How to use this precalculus sequences series test answer key

Use this precalculus sequences series test answer key to score the test fairly and to see which skills need more practice.

