Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Sequences as Discrete Functions

Discrete vs. Continuous Functions and Domain | A1-U04-P10

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 verified sequence interpretation, value, domain, graph, or judgment.

8 PDFs and a README; 61 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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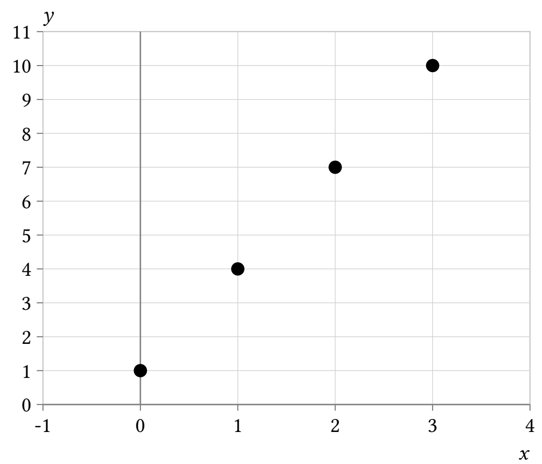
Algebra 1

Sequences as Discrete Functions

Name: ____________________ **Date:** ____________________ **Class:** ____________________

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

A graph shows filled points $(0, 1), (1, 4), (2, 7), (3, 10)$ and explicitly says the sequence ends at $n = 3$. Should an arrow extend the pattern?



Bank label: ______

Given d_1=20 and d_n=d_{n-1}-n for $n \geq 2$, generate d_2, d_3, d_4.

Bank label: ______

A listed sequence starts at index 3: x_3=20, x_4=17, x_5=14. Which notation names the first listed value?

Index	Value
3	20
4	17
5	14

Bank label: ______

A sequence starts 1, 2, 5 and is explicitly known to have constant second difference 2. Is the next term determined?

Bank label: ______

Algebra 1

Sequences as Discrete Functions

Name: ______________ **Date:** ______________ **Class:** ______________

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Given $a_n = n^2 - 3n + 5$ for positive integers, compute a_1, a_4, and a_7.	A sequence begins at $n = 4$ and follows $t_n = 5 + 3(n - 4)$. Find t_4 and t_9.
For $n = 1, 2, 3, \ldots$, the sequence is $a_n = 3n + 2$. Find a_4.	A sequence is defined only at perfect-square indices no greater than 25, beginning with 1. List the domain.
For $n = 0, 1, 2, \ldots$, define q_n as n plus -1 raised to the nth power. Find q_2 and q_3.	A sequence is defined only for n in $\{1, 4, 9, 16\}$ by $d_n = \sqrt{n} + n$. Evaluate d_9 and decide whether d_{10} exists.

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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.

Incoming: Sample 4 has measured temperature 18.5 degrees.

The pairs for a sequence are $(1,5),(2,8),(3,5)$. What does q_3 equal?

Index	Value
1	5
2	8
3	5

Your response: ______________

Incoming: The lookup gives $q_3 = 5$.

Let e_0=2 and e_n=e_{n-1}+2n for $n \geq 1$. Determine e_1 through e_3.

Your response: ______________

Incoming: The table entry is $c_0 = 7$.

The sequence T_k gives the temperature of sample k, and samples are numbered starting at 1. Interpret T_4=18.5.

Your response: ______________

Incoming: No. $A_3 = 9$, whereas $B_3 = 15$.

The rule d_n=5 − 4n applies for $n = 1, 2, 3,\ldots$. Find d_3.

Your response: ______________

Incoming: The rule gives $p_6 = 15$.

The rule e_n is supplied for integers $2 \leq n \leq 6$. List its domain.

Your response: ______________

Incoming: The fifth term is $b_5 = 10$.

The rule j_n=$(n-2)^2 + 1$ is defined for $n = 0, 1,\ldots,6$. Fill the entries for $n = 2$ and $n = 5$.

Your response: ______________

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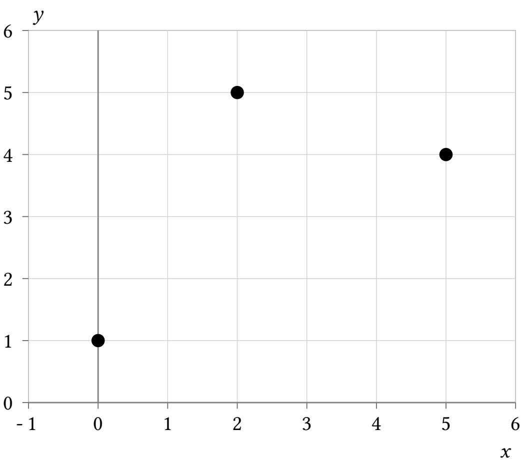
Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

A sequence graph has exactly $(0,1),(2,5),(5,4)$. A student adds points $(1,3),(3,\frac{14}{3}),(4,\frac{13}{3})$ by connecting segments. Diagnose all added points.

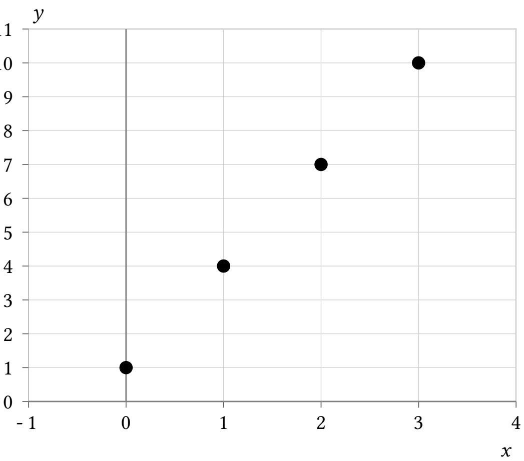


Sequences as Discrete Functions

Full Worked Solutions - excerpt

Worked example

Problem. A graph shows filled points $(0, 1), (1, 4), (2, 7), (3, 10)$ and explicitly says the sequence ends at $n = 3$. Should an arrow extend the pattern?



Answer. No. The graph is exactly those four points and has no continuation arrow.

Explanation and check.

A visible pattern does not override the stated finite domain $\{0, 1, 2, 3\}$.

Worked example

Problem. Given $d_1 = 20$ and $d_n = d_{n-1} - n$ for $n \geq 2$, generate d_2, d_3, d_4.

Answer. The values are $d_2 = 18, d_3 = 15$, and $d_4 = 11$.

Explanation and check.

Subtract 2, then 3, then 4 from the current preceding value.