

Algebra 1
Quadratic Function Classification and Range

Quadratic Function Classification and Range | A1-U09-P01

96 problems · Four activity formats

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Topic focus
Across 96 tasks this topic asks for decision and justification preserving the original requested quantities.
8 PDFs and a README; 122 buyer pages.

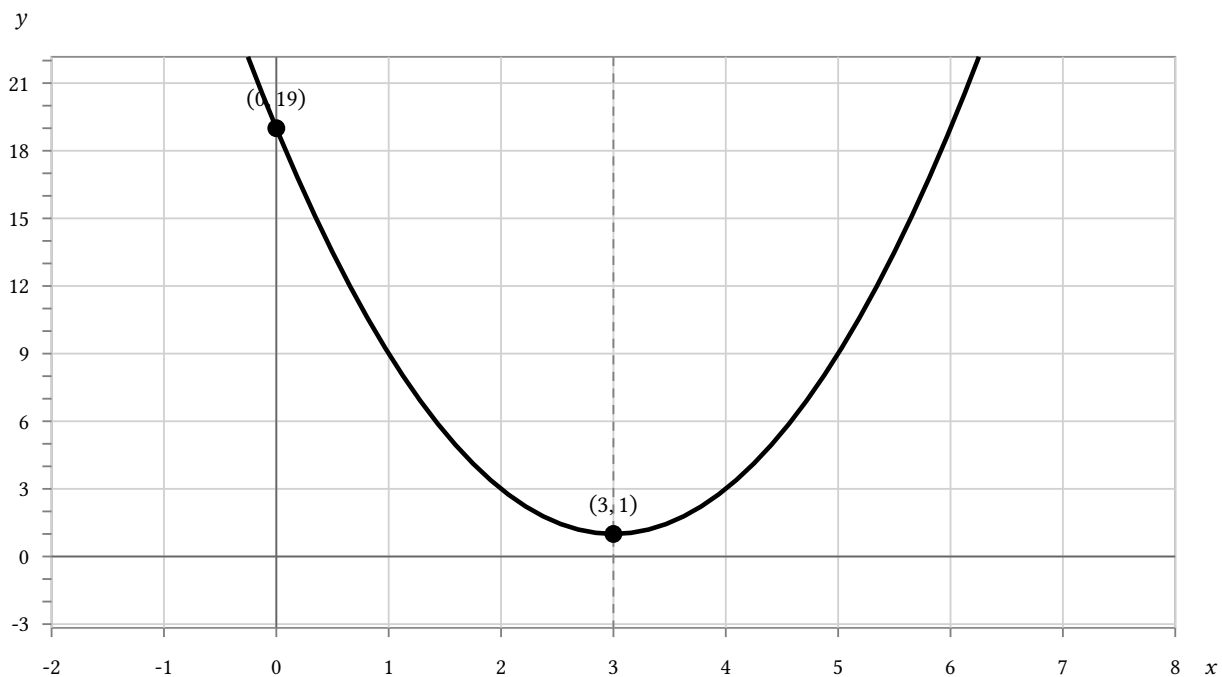
Algebra 1

Quadratic Function Classification and Range

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.

Explain the intercept status using the extremum, and give end behavior. For the answer bank, record the minimum point as (x, y) . Complete and justify every part of the original task in your work.



Bank label: _____

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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

Use finite differences to decide whether the table is compatible with a quadratic model.

Model assumption: values come from a polynomial of degree at most 2

Input	Output
-2	7
-1	2
0	1
1	4
2	11

Predict the opening and extremum type without locating the vertex.

Rule: $g(x) = 5x^2 - 7x + 1$ Leading coefficient: 5

Compute the second differences and interpret their sign.

Model assumption: polynomial degree at most 2

Input	Output
-1	2
0	5
1	4
2	-1
3	-10

State the opening, extremum type, and end behavior. Rule:

$q(x) = -x^2 + 12x + 8$ Leading coefficient: -1

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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.

Explain why ordinary consecutive second differences are not valid evidence here and what must be addressed.

Declared family: unspecified

Input	Output
0	1
1	4
3	16
6	49

Choose between classifying by the largest displayed exponent and combining like terms first. Use the chosen method to determine the actual degree and justify it. Rule: $s(x) = x(x^2 + 2x - 1) - x^3 + 4$

Quadratic Function Classification and Range

Full Worked Solutions - excerpt

Worked example

Problem. Classify h and identify its leading coefficient. Rule: $h(x) = x(x + 1) + (x - 2)^2$

Answer. quadratic with leading coefficient 2

Explanation and check.

The rule becomes $x^2 + x + x^2 - 4x + 4 = 2x^2 - 3x + 4$.

Worked example

Problem. Classify h by its actual degree after simplification. Rule: $h(x) = 3(x^2 + 2x) - 3x^2 + 4$ Domain: all real x

Answer. linear, not quadratic

Explanation and check.

The x^2 terms cancel, leaving $h(x) = 6x + 4$, which has degree 1.