Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Interpreting Piecewise Linear Graphs

Graphing Piecewise-Defined Functions | A1-U04-P12

96 problems · Four activity formats

Topic focus

Across 96 tasks this topic asks for exact behavior intervals, features, construction, or justified conclusion.

8 PDFs and a README; 105 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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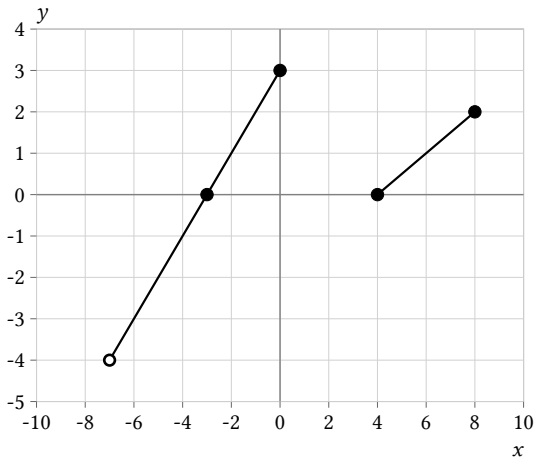
Algebra 1

Interpreting Piecewise Linear Graphs

Name: _____ **Date:** _____ **Class:** _____

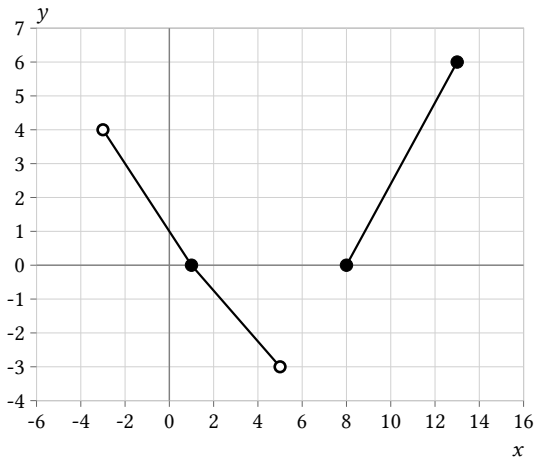
Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Use the stated line segments, not a sketch estimate: component 1: connect $(-7, -4)$ to $(-3, 0)$ to $(0, 3)$; its left endpoint is open and right endpoint is included; component 2: connect $(4, 0)$ to $(8, 2)$; its left endpoint is included and right endpoint is included. List all x-intercepts and the y-intercept, if each exists.



Bank label: _____

Read output sign, not direction of travel, from: component 1: connect $(-3, 4)$ to $(1, 0)$ to $(5, -3)$; its left endpoint is open and right endpoint is open; component 2: connect $(8, 0)$ to $(13, 6)$; its left endpoint is included and right endpoint is included. State where $f(x)$ is positive, negative, and zero.



Bank label: _____

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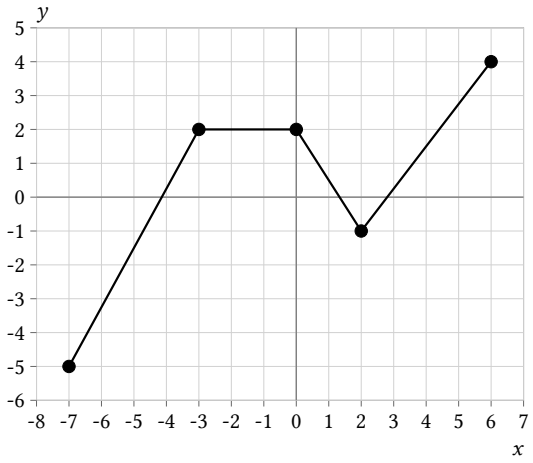
Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

Use these exact vertices and no points in any domain gap: connect $(-7, -5)$ to $(-3, 2)$ to $(0, 2)$ to $(2, -1)$ to $(6, 4)$; its left endpoint is included and right endpoint is included. List the input intervals where the function is increasing, decreasing, or constant.



The function graph has the following exact connected pieces: connect $(1, 3)$ to $(4, 0)$ to $(8, -5)$; its left endpoint is included and right endpoint is included. List all x-intercepts and the y-intercept, if each exists.

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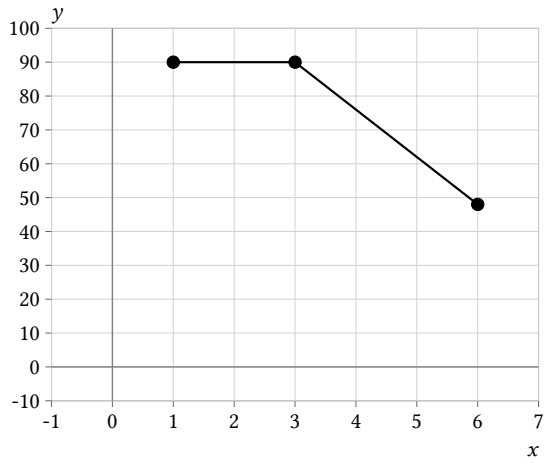
Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: The global maximum is 3 at $x = 2$, and the global minimum is -5 at $x = -3$.

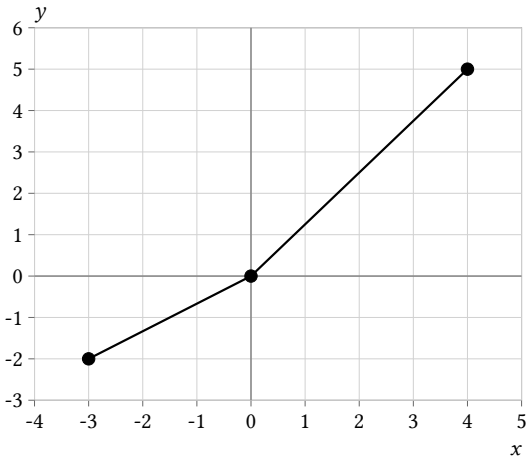
A graph shows inventory $I(d)$ in boxes at the end of day d by connecting $(1, 90), (3, 90), (6, 48)$ in order. Interpret the first segment and the later decrease.



Your response: _____

Incoming: Inventory stays at 90 boxes from day 1 through day 3, then falls to 48 boxes by day 6.

Determine both kinds of axis intercept from this exact graph: connect $(-3, -2)$ to $(0, 0)$ to $(4, 5)$; its left endpoint is included and right endpoint is included. List all x-intercepts and the y-intercept, if each exists.



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.

Audit this qualitative analysis: A graph rises from $(-5, -4)$ to $(2, 6)$. A student reports that it increases on $-4 < y < 6$. Correct the claim.

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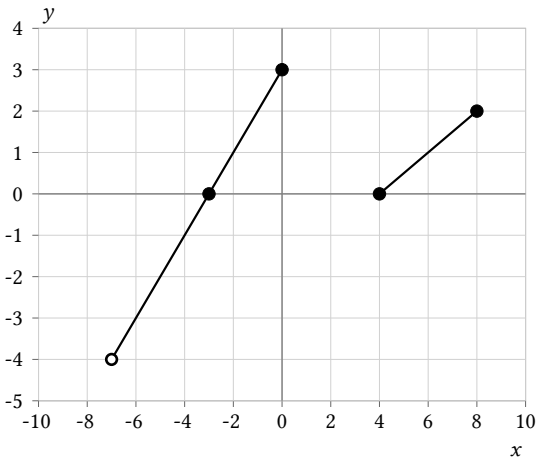
Full Worked Solutions - excerpt

Worked example

Problem. Use the stated line segments, not a sketch estimate: component 1: connect $(-7,-4)$ to $(-3,0)$ to $(0,3)$; its left endpoint is open and right endpoint is included; component 2: connect $(4,0)$ to $(8,2)$; its left endpoint is included and right endpoint is included. List all x-intercepts and the y-intercept, if each exists.



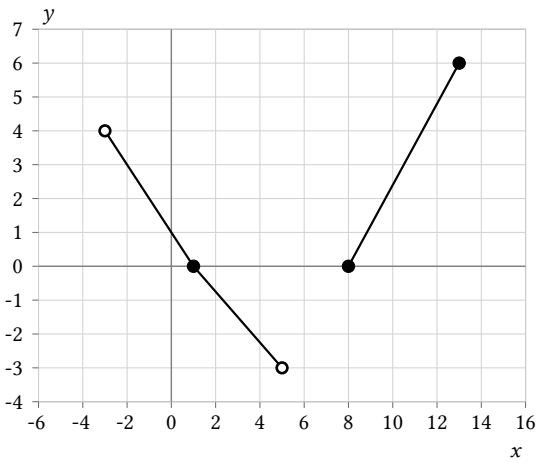
Answer. x-intercept set: $(-3,0),(4,0)$; y-intercept: $(0,3)$. The exact domain is $(-7,0]$ union $[4,8]$.

Explanation and check.

Use the exact segment equations implicit in the listed vertices for crossings, and retain only included points at either axis.

Worked example

Problem. Read output sign, not direction of travel, from: component 1: connect $(-3,4)$ to $(1,0)$ to $(5,-3)$; its left endpoint is open and right endpoint is open; component 2: connect $(8,0)$ to $(13,6)$; its left endpoint is included and right endpoint is included. State where $f(x)$ is positive, negative, and zero.



Answer. Positive on $(-3,1),(8,13]$; negative on $(1,5)$; zero on $x=1, x=8$.

Explanation and check.

Direction of travel is irrelevant here: only being above, on, or below $y=0$ determines positive, zero, or negative output.