

AP Precalculus
Sine and Cosine Parent Graphs

Sine and Cosine Parent Graphs | APPC-U03-P07

96 problems · Four activity formats

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Topic focus

Across 96 tasks this topic asks for direction, sign, turning, and bending description, exact average rate and interpretation, missing projection and graph identity, parent graph and projection explanation, projection error and correction and missing anchors and verified curve.

8 PDFs and a README; 191 buyer pages.

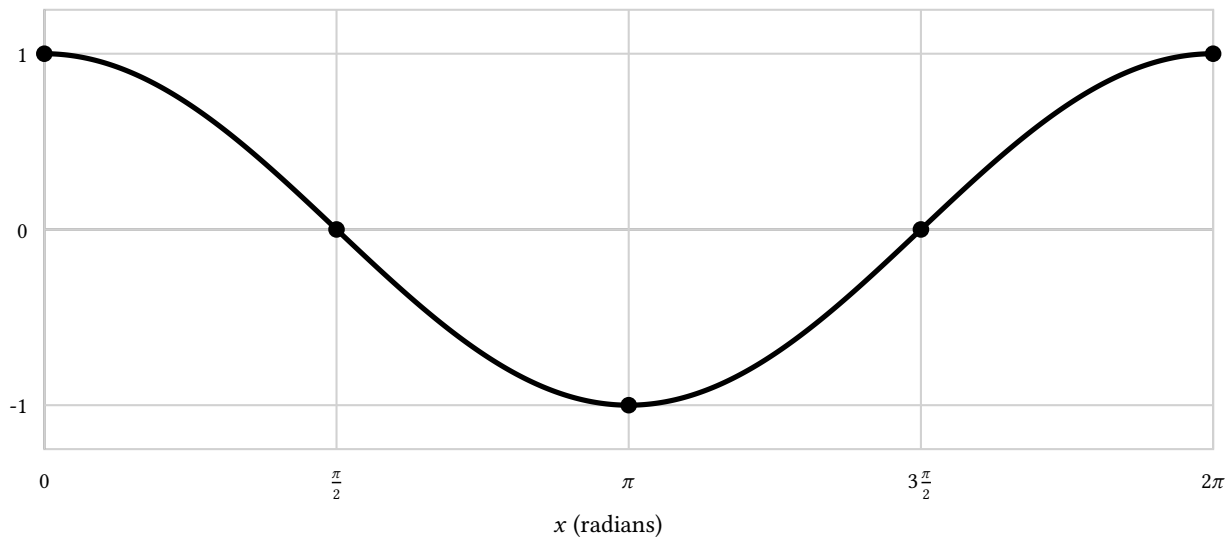
AP Precalculus

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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.

From the labeled parent graph $y = \cos x$ on the closed window $[0, 2\pi]$, identify its zeros. List event coordinates rather than confusing x -locations with output values, and include boundary events.



x	y
0	1
$\frac{\pi}{2}$	0
π	-1
$\frac{3\pi}{2}$	0
2π	1

Bank label: _____

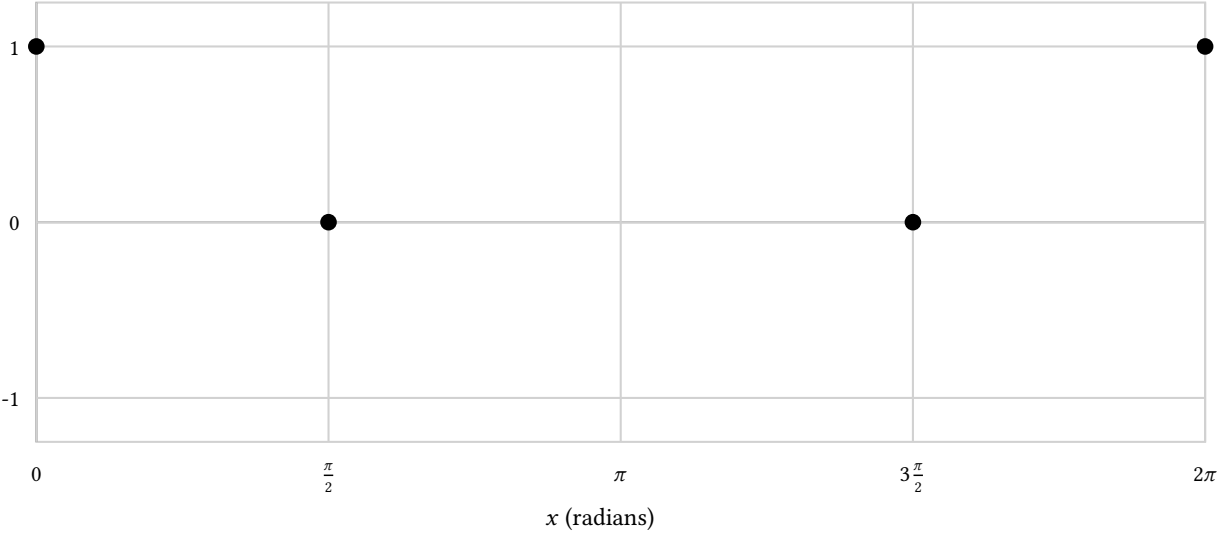
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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

For the stated parent $y = \cos x$ on $[0, 2\pi]$, restore every question-mark quarter-turn anchor from the partial data, then sketch one smooth continuous parent curve with exact endpoints.



x	y
0	1
$\frac{\pi}{2}$	0
π	-1
$3\frac{\pi}{2}$	0
2π	1

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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.

START

For $y = \cos x$ on $[0, \frac{\pi}{2}]$, compute the finite average rate of change in output per radian from the exact endpoint values. Interpret the sign, and do not use derivative language.

Required response

x	y
0	1
$\frac{\pi}{2}$	0

Your response: _____

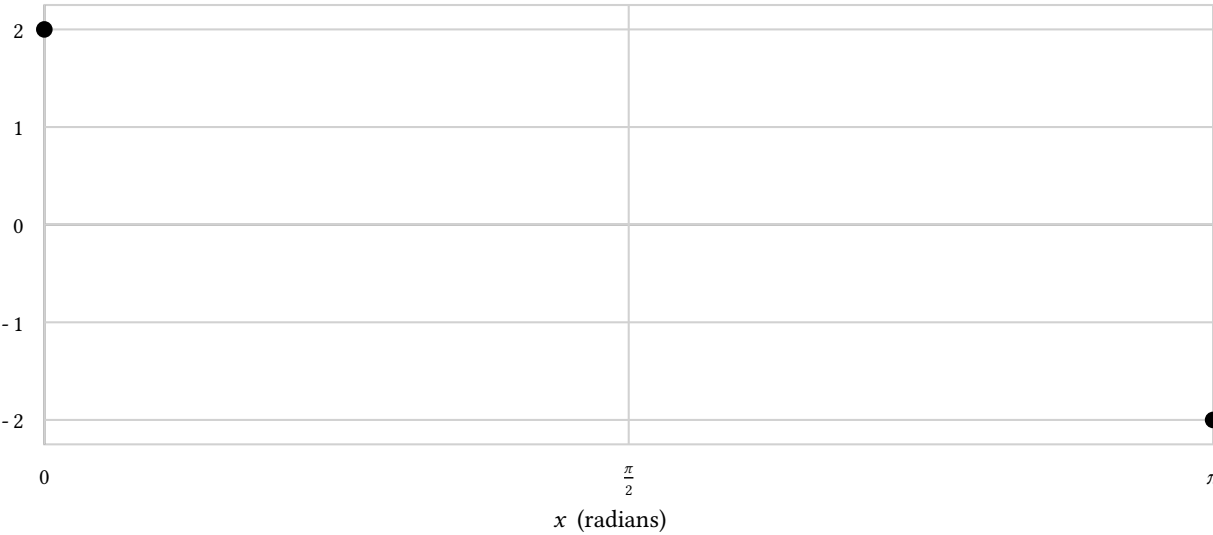
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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Audit the proposed $y = \cos x$ sketch using value at zero, quarter-turn anchors, range, cycle joins, and smoothness. Identify the first structural error and give the smallest sufficient repair.



x	y
0	2
π	-2

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Full Worked Solutions - excerpt

Worked example

Problem. For $y = \cos x$ on $[\frac{\pi}{2}, 2\pi]$, compute the finite average rate of change in output per radian from the exact endpoint values. Interpret the sign, and do not use derivative language.

Answer. average rate = $\frac{2}{3\pi}$; output rises overall

Explanation and check.

Compute $\frac{(1)-(0)}{(2\pi)-(\frac{\pi}{2})} = \frac{2}{3\pi}$. Thus output rises overall.

Worked example

Problem. For $y = \cos x$ on $[3\frac{\pi}{2}, 2\pi]$, compute the finite average rate of change in output per radian from the exact endpoint values. Interpret the sign, and do not use derivative language.

Answer. average rate = $\frac{2}{\pi}$; output rises overall

Explanation and check.

Compute $\frac{(1)-(0)}{(2\pi)-(3\frac{\pi}{2})} = \frac{2}{\pi}$. Thus output rises overall.