

AP Precalculus
Equivalent Polar Coordinates

Equivalent Polar Coordinates | APPC-U03-P23

96 problems · Four activity formats

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Topic focus

Across 96 tasks this topic asks for diagnosis and corrected pair, same or different, distance and location, one pair, one polar pair and equivalence group.

8 PDFs and a README; 157 buyer pages.

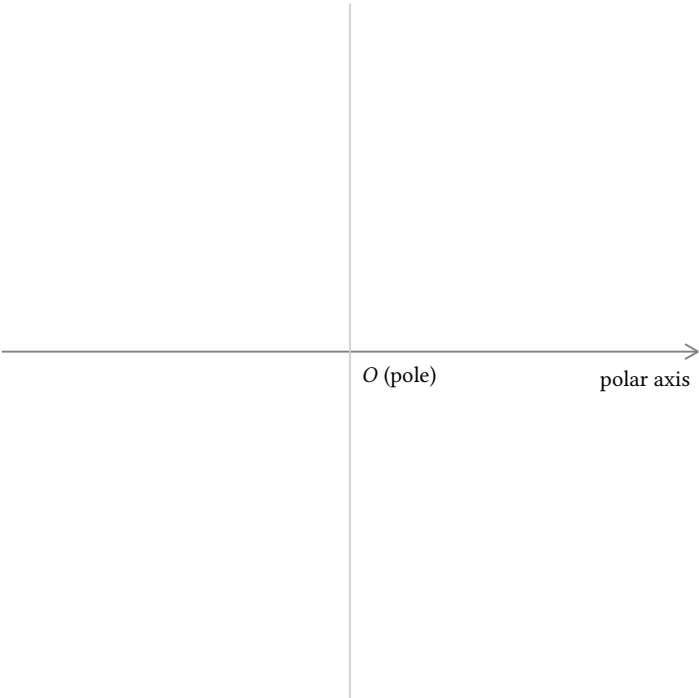
AP Precalculus

Equivalent Polar Coordinates

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.

Find the signed radius r that makes $(r, 5\frac{\pi}{6})$ equivalent to $(5, 11\frac{\pi}{6})$.



Condition or evidence	Supplied value
Incomplete polar record	$(r, 5\frac{\pi}{6})$
Known polar record	$(5, 11\frac{\pi}{6})$

Bank label: _____

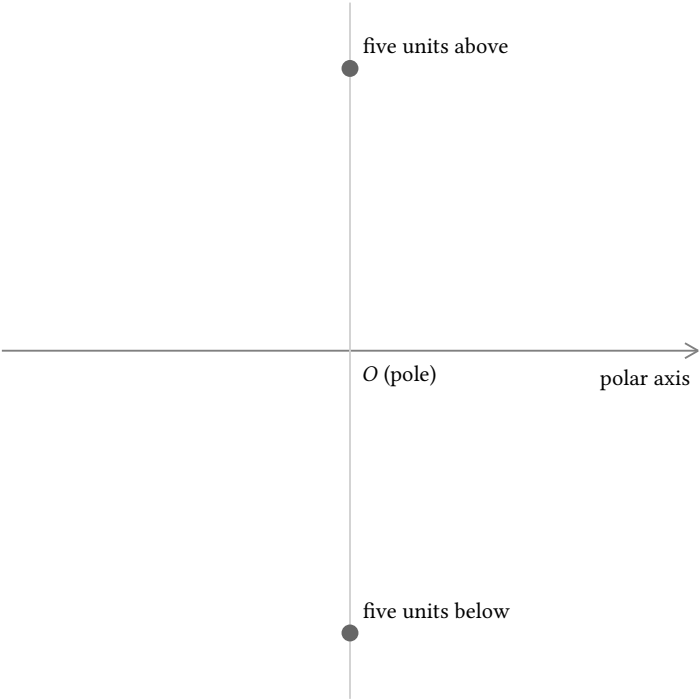
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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

A plot offers points five units above and five units below the pole. Which one represents $(-5, \frac{\pi}{2})$?



Condition or evidence	Supplied value
Candidate points	
	five units above
	five units below
Given polar record	$(-5, \frac{\pi}{2})$

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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: $\theta = -3\frac{\pi}{10}$

An equivalent pair for $(7, 4\frac{\pi}{3})$ is required to have $\theta = \frac{\pi}{3} + 2k\pi$. What must r be for every integer k ?
Solve the card and move only to the card whose incoming header matches the entire requested response.

Condition or evidence	Supplied value
Given angle form	$\theta = \frac{\pi}{3} + 2k\pi$
Incomplete polar record	(r, θ)
Known polar record	$(7, 4\frac{\pi}{3})$

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.

For $(-a, \frac{\pi}{6})$ with $a = -5$, evaluate the radius before interpreting the point. Correct the claim that the visible minus sign automatically reverses the ray. Justify the comparison by distinguishing signed radius, ordinary distance and actual location.

Compare the stated cases, methods, or representations and justify the conclusion using the supplied conditions.

Condition or evidence	Supplied value
Assumption	$a = -5$
Given polar record	$(-a, \frac{\pi}{6})$
Student claim to examine	The written minus sign always means a negative radius.

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Full Worked Solutions - excerpt

Worked example

Problem. Fill in r so the table entry $(r, 13\frac{\pi}{6})$ names the same point as $(3, \frac{\pi}{6})$.

Solve the problem, then match the entire requested response to one unused entry in the Answer Bank.

Candidate	Reference
$(r, 13\frac{\pi}{6})$	$(3, \frac{\pi}{6})$

Answer. $r = 3$

Explanation and check.

The angles differ by 2π , so the radius retains both its magnitude and sign.

Worked example

Problem. Complete the row $(r, 0)$ so it is equivalent to $(-8, \pi)$.

Solve the card and move only to the card whose incoming header matches the entire requested response.

Condition or evidence	Supplied value
Incomplete record	$(r, 0)$
Known record	$(-8, \pi)$

Answer. $r = 8$

Explanation and check.

The negative radius reverses the π ray to the 0 ray at distance 8, so the second pair uses $r = 8$.