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Polar coordinates - self-made worksheet for calculus2

Calculus II (Toronto Metropolitan University)

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Polar coordinates

1. Convert the Cartesian coordinate (3,4) to polar coordinates.
2. Given the polar coordinates (5, 150°), find the corresponding Cartesian coordinates.
3. Plot the polar coordinate (6, 60°) on a polar plane.
4. Find the distance between the points with polar coordinates (5, 30°) and (7, 75°).
5. Convert the complex number 3 + 4i to polar form.
6. Find the midpoint of the two points given in polar coordinates (3, 60°) and (5, 150°).
7. Sketch the graph of the polar equation r = 2cos(θ).
8. Determine the polar equation for the line that passes through the points with polar coordinates (4, 30°) and (2, 150°).
9. Express the point (-2, -3) in polar form.
10. Convert the polar equation r = 4 to Cartesian form.

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Answers

11. The polar coordinates corresponding to the Cartesian coordinate (3, 4) are (5, 53.13°).

12. The Cartesian coordinates corresponding to the polar coordinates (5, 150°) are (-2.5, -2.5).

13. The point with polar coordinates (6, 60°) is located 6 units away from the origin and 60° counterclockwise from the positive x-axis.

14. The distance between the points with polar coordinates (5, 30°) and (7, 75°) is approximately 3.44.

15. The polar form of the complex number 3 + 4i is (5, 53.13°).

16. The midpoint of the two points given in polar coordinates (3, 60°) and (5, 150°) is (4, 105°).

17. The graph of the polar equation r = 2cos(θ) is a rose curve with two petals.

18. The polar equation for the line that passes through the points with polar coordinates (4, 30°) and (2, 150°) cannot be determined as it is not possible to express a line in polar form.

19. The polar form of the point (-2, -3) is (3.61, -126.87°).

20. The Cartesian form of the polar equation r = 4 is x = 4cos(θ) and y = 4sin(θ).

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