

Precalculus - Polar Form and De Moivre's Theorem - Test

Common Core N-CN.B.4, N-CN.B.5, N-CN.B.6 · maths-pdf.fr/en/

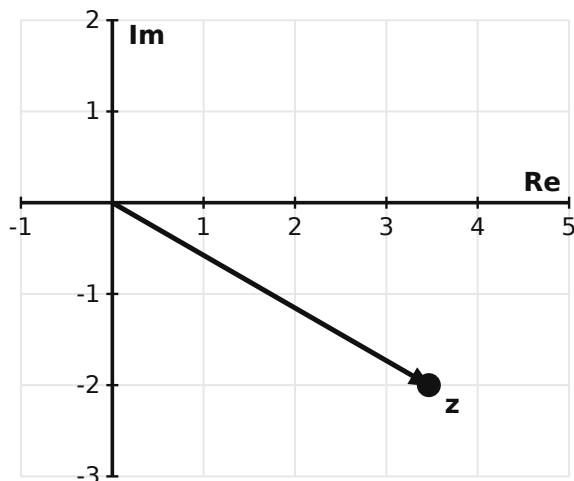
Name: _____ Class: _____ Date: ____/____/____

This 20-point test covers polar and rectangular form, products, quotients, De Moivre powers and nth roots (N-CN.B.4 to N-CN.B.6). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Polar Form and De Moivre's Theorem
- Standards: N-CN.B.4, N-CN.B.5, N-CN.B.6
- Time: 45 minutes
- Total: 20 points

Question 1 - Polar form [2 pts]



The number z .

Write $2\sqrt{3}-2i$ in polar form with $0^\circ \leq \theta < 360^\circ$.

Question 2 - Rectangular form [2 pts]

Write $8(\cos 225^\circ + i \sin 225^\circ)$ in the form $a+bi$.

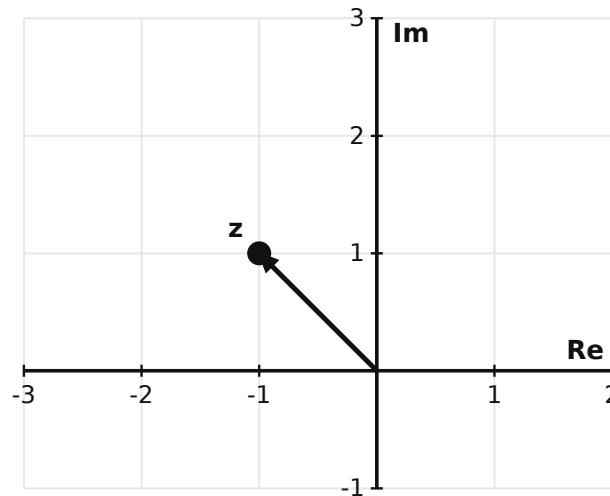
Question 3 - Product [2 pts]

Multiply $4 \operatorname{cis} 40^\circ$ and $2.5 \operatorname{cis} 80^\circ$. Give polar and rectangular forms.

Question 4 - Quotient [2 pts]

Divide $18 \operatorname{cis} 280^\circ$ by $6 \operatorname{cis} 100^\circ$.

Question 5 - Power with De Moivre [3 pts]



The point $z = -1 + i$.

Let $z = -1 + i$. (a) Write z in polar form. (b) Use De Moivre's theorem to find z^6 . (c) Write z^6 in rectangular form.

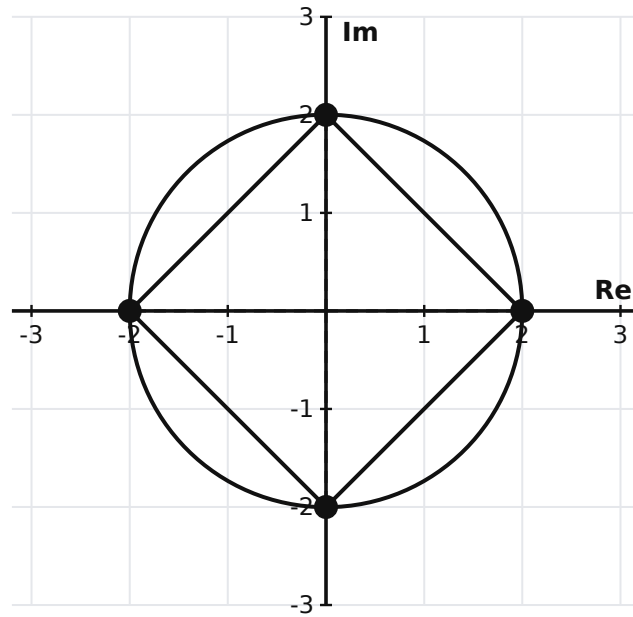
Question 6 - Large power [2 pts]

Evaluate $(1-i)^{10}$.

Question 7 - Cube roots [2 pts]

Find the three cube roots of -27 in polar form.

Question 8 - Fourth roots [3 pts]



Four equally spaced points.

(a) Write 16 in polar form. (b) Find the four fourth roots of 16. (c) Explain why they form a square.

Question 9 - Rotation [2 pts]

Rotate $-2+5i$ by 90° counterclockwise by multiplying by i .