

Precalculus - Complex Numbers and Complex Zeros - Test

Common Core N-CN.A.1, N-CN.A.2, N-CN.A.3, N-CN.C.7, N-CN.C.8, N-CN.C.9 · maths-pdf.fr/en/

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

This 20-point test covers arithmetic with complex numbers, the complex plane, complex roots of quadratics and conjugate pairs (N-CN.A, N-CN.C). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Complex Numbers and Complex Zeros
- Standards: N-CN.A.1, N-CN.A.2, N-CN.A.3, N-CN.C.7, N-CN.C.8, N-CN.C.9
- Time: 45 minutes
- Total: 20 points

Question 1 - Powers and radicals [2 pts]

Simplify i^{43} and $\sqrt{-48}$.

Question 2 - Multiply [2 pts]

Multiply: $(3-2i)(1+4i)$.

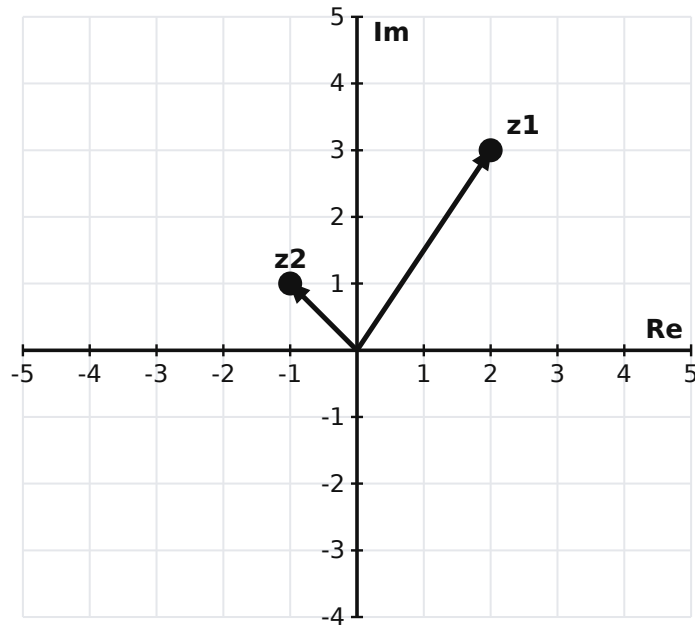
Question 3 - Divide [2 pts]

Write $\frac{5+i}{2-3i}$ in the form $a+bi$.

Question 4 - Modulus and conjugate [2 pts]

For $z = -5+12i$, find $|z|$ and $z\bar{z}$, where $\bar{z}$ is the conjugate.

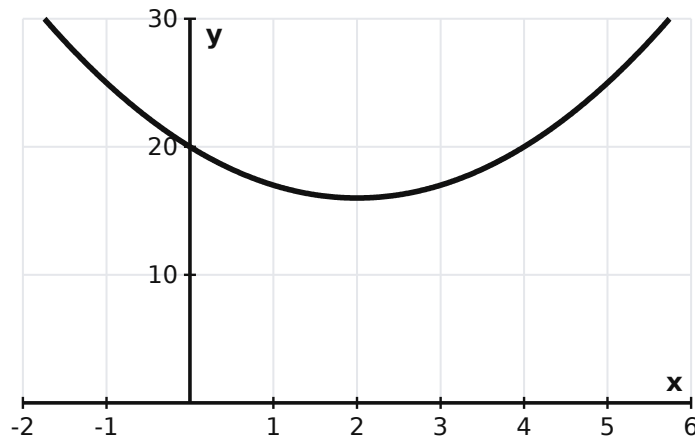
Question 5 - Complex plane [3 pts]



Two complex numbers.

The graph shows z_1 and z_2 . (a) Write each as $a+bi$. (b) Find z_1+z_2 . (c) Find $|z_1|$.

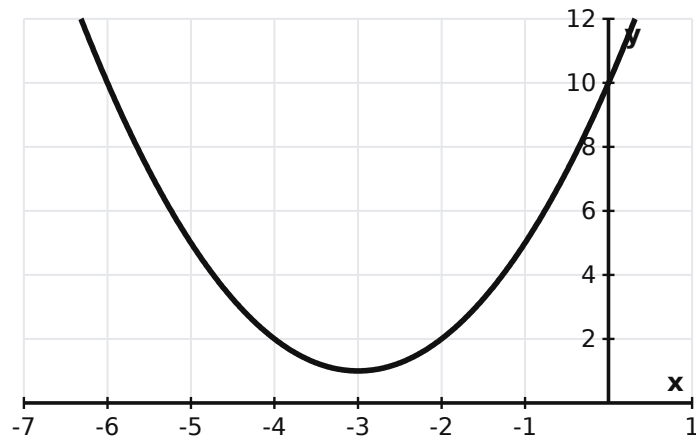
Question 6 - Quadratic with complex roots [2 pts]



Graph of $y = x^2 - 4x + 20$.

Solve $x^2 - 4x + 20 = 0$.

Question 7 - Classify the roots [2 pts]



Graph of $y = x^2 + 6x + 10$.

Find the discriminant of $x^2 + 6x + 10 = 0$, classify its roots, and solve.

Question 8 - Conjugate pairs and degree [3 pts]

A degree-4 polynomial f with real coefficients and leading coefficient 1 has zeros 1, 2 and $3-i$. (a) Find the fourth zero. (b) Write the quadratic factor with real coefficients. (c) Write $f(x)$ in standard form.

Question 9 - Verify a root [2 pts]

Show that $2-i$ is a root of $x^2 - 4x + 5$.