

Algebra 2 - Complex Numbers: Adding, Subtracting and Multiplying - Test

Common Core N-CN.A.1, N-CN.A.2 · maths-pdf.fr/en/

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

This 45-minute test on adding, subtracting and multiplying complex numbers has 9 questions worth 20 points in total. The questions move from direct skills to multi-step problems. Show your work, because partial credit is given for a correct setup and sound reasoning.

About this test

- Grade: Algebra 2
- Chapter: Complex Numbers: Adding, Subtracting and Multiplying
- Standards: N-CN.A.1, N-CN.A.2
- Time: 45 minutes
- Total: 20 points

Question 1 - Imaginary radicals [2 pts]

- Simplify $\sqrt{-64}$. (1 point)
- Write $\sqrt{-75}$ in the form $b\mathbf{i}$ with the radical simplified. (1 point)

Question 2 - Powers of $\mathbf{i}$ [2 pts]

Evaluate each power.

- $\mathbf{i}^{15}$ (1 point)
- $\mathbf{i}^{102}$ (1 point)

Question 3 - Add and subtract [2 pts]

Perform each operation.

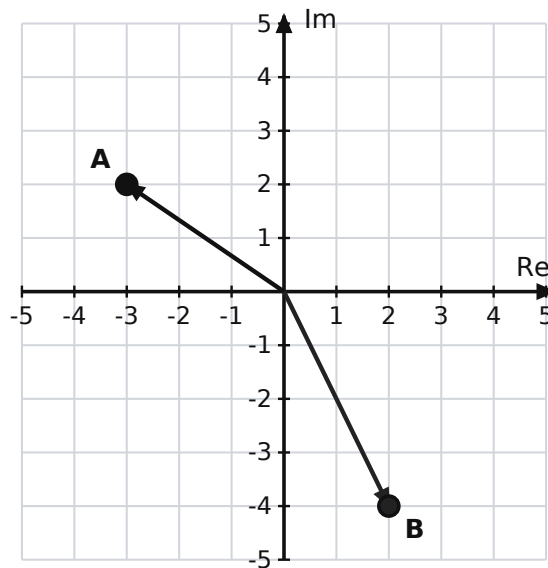
- $(6-3\mathbf{i})+(-2+8\mathbf{i})$ (1 point)
- $(4+\mathbf{i})-(9-5\mathbf{i})$ (1 point)

Question 4 - Multiply [3 pts]

Multiply and write the answer in $a+bi$ form.

- a. $(3+2i)(1-4i)$ (2 points)
- b. $(2+7i)(2-7i)$ (1 point)

Question 5 - Read the plane [2 pts]



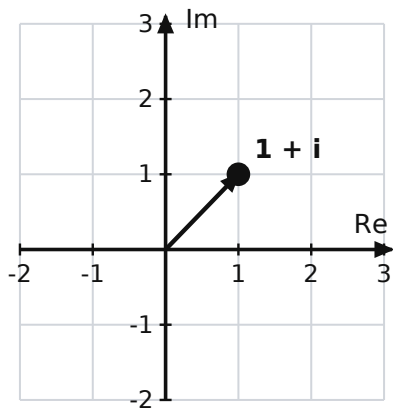
Points A and B.

Write the complex number for each point, then find the sum $A+B$.

Question 6 - Complex solutions [2 pts]

Solve $3x^2+48=0$ over the complex numbers.

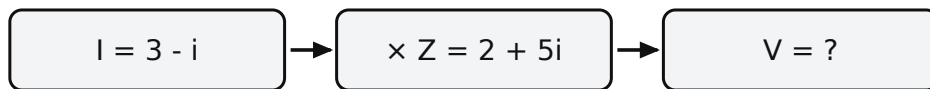
Question 7 - Expression with powers [3 pts]



The number $1 + i$.

Simplify $3i^2 - 2i^5 + (1+i)^2$ and write the result in $a+bi$ form.

Question 8 - Impedance [2 pts]



$$V = IZ$$

A circuit has current $I = 3 - i$ amps and impedance $Z = 2 + 5i$ ohms. Voltage is $V = IZ$. Find the voltage in $a+bi$ form.

Question 9 - Equal complex numbers [2 pts]

Two complex numbers are equal when their real parts are equal and their imaginary parts are equal. Find x and y if $(x+2i)+(3-yi)=7+5i$.