

Algebra 2 · Real and Complex Numbers · Test

Common Core N-RN.A.1, N-RN.A.2, N-CN.A.1, N-CN.A.2 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

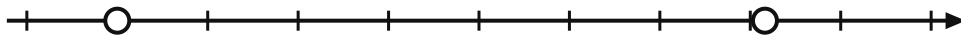
This test has 9 questions worth 20 points in all. Allow 45 minutes. Show all your work: partial credit is given for correct steps. Write complex numbers in the form $a + bi$ and simplify every power of i . A calculator is not needed.

Test information

- **Grade:** Algebra 2
- **Chapter:** Real and Complex Numbers
- **Common Core:** N-RN.A.1, N-RN.A.2, N-CN.A.1, N-CN.A.2
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 2 pts; Question 7: 3 pts; Question 8: 2 pts; Question 9: 2 pts)

Question 1: Classify marked numbers (2 points)

Two numbers are marked on the number line.

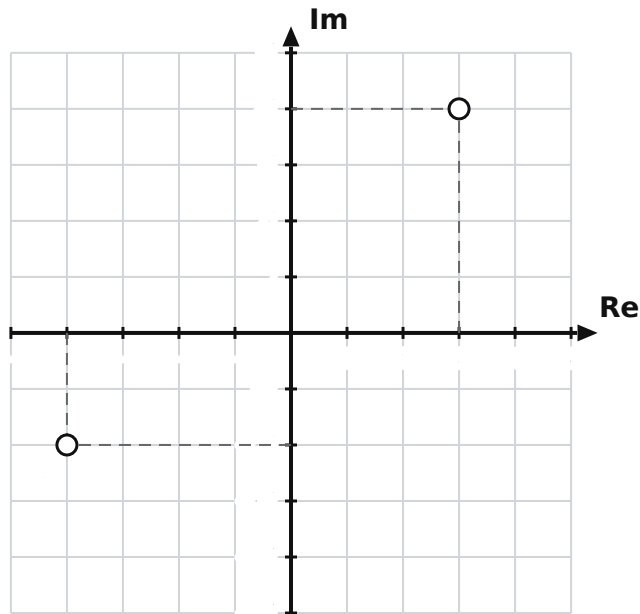


Two marked numbers.

- Is each number rational or irrational? (1 point)
- Name the smallest of these sets that contains each number: natural, integer, rational, irrational. (1 point)

Question 2: Points in the complex plane (2 points)

Write the complex number for each point shown.



Points M and N.

- a. Point M (1 point)
- b. Point N (1 point)

Question 3: Imaginary unit (2 points)

- a. Simplify $\sqrt{-72}$. (1 point)
- b. Solve $3x^2+48=0$. (1 point)

Question 4: Add and subtract (2 points)

Write each result in the form $a+bi$.

- a. $(5-3i)+(-8+7i)$ (1 point)
- b. $(6+2i)-(9-5i)$ (1 point)

Question 5: Multiply (3 points)

Write each product in the form $a+bi$.

- a. $(4-i)(2+3i)$ (1 point)
- b. $(3+5i)^2$ (1 point)
- c. $(7+2i)(7-2i)$ (1 point)

Question 6: Powers of i (2 points)

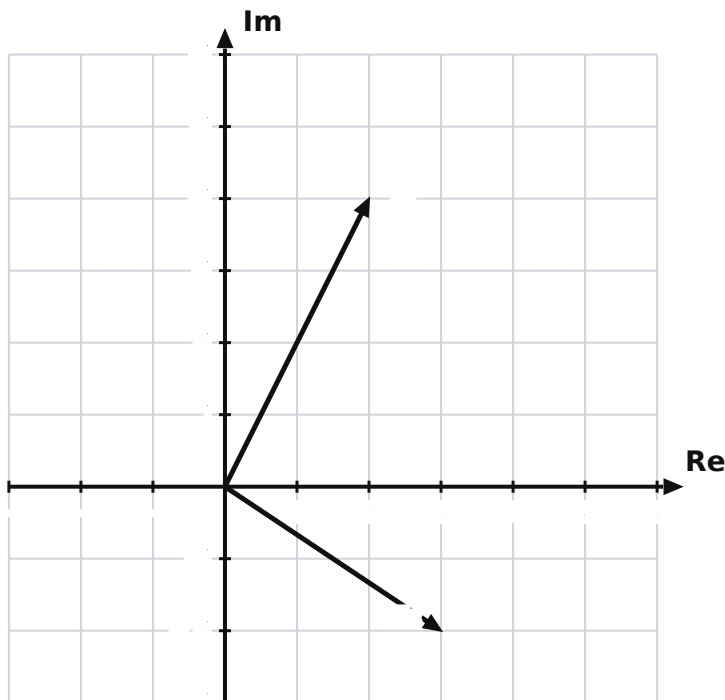
Simplify.

a. i^{38} (1 point)

b. i^{83} (1 point)

Question 7: Arrows in the plane (3 points)

The arrows show two complex numbers z_1 and z_2 .



The complex numbers z_1 and z_2 drawn from the origin.

a. Write z_1 and z_2 in the form $a+bi$. (1 point)

b. Find z_1+z_2 . (1 point)

c. Find z_1-z_2 . (1 point)

Question 8: Check a solution (2 points)

Show that $2+i$ is a solution of $x^2-4x+5=0$.

Question 9: Find the error (2 points)

Liam writes $(2+3i)(2-3i)=4-9i^2=4-9=-5$. Find his mistake and give the correct product.