

Questions: Arithmetic on complex numbers

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Summary

A selection of questions for the study guide on arithmetic on complex numbers.

Before attempting these questions, it is highly recommended that you read [Guide: Arithmetic on complex numbers](#).

Q1

Work out each of the following expressions, expressing your answer in the form $a + bi$ where a is the real part and b is the imaginary part.

- 1.1. $(5 + 7i) - (2 + 3i)$
- 1.2. $(8 + 6i) + (2 - 4i)$
- 1.3. $(4 - i\sqrt{2}) - (3 + i\sqrt{7})$
- 1.4. $(\sqrt{8} + 4i) - (\sqrt{5} + 2i)$
- 1.5. $(\sqrt{7} + 3i) + (2 - i)$
- 1.6. $(5 + i\sqrt{2}) - (7 - i) + (\sqrt{3} + 4i)$

Q2

Work out each of the following expressions, expressing your answer in the form $a + bi$ where a is the real part and b is the imaginary part.

- 2.1. $(2 + 3i)(4 + 5i)$
- 2.2. $(3 + i)(2 - i)$
- 2.3. $4(6 + 3i)$
- 2.4. $(1 + i)^2$
- 2.5. $(3 + 2i)^3$

- 2.6. $(7 - 4i)^2(i - 2)$
 2.7. $(1 - i\sqrt{3})^3$
 2.8. $(5 - 2i)(5 + 2i)$
 2.9. $(\sqrt{2} + i\sqrt{3})(\sqrt{8} - i\sqrt{3})$

Q3

Work out each of the following expressions, expressing your answer in the form $a + bi$ where a is the real part and b is the imaginary part.

- 3.1. $\frac{7 - 6i}{1 + 2i}$
 3.2. $\frac{4 - i}{1 + 4i}$
 3.3. $\frac{3}{5i}$
 3.4. $\frac{4 + 2i}{3 - i}$
 3.5. $\frac{9 + i}{i}$
 3.6. $\frac{-2 - 2i}{-2 + 2i}$
 3.7. $\frac{1 + 5i}{-3i}$
 3.8. $\frac{-4}{1 - i}$
 3.9. $\frac{1 - 3i}{1 + 2i}$

Q4

Work out each of the following expressions, expressing your answer in the form $a + bi$ where a is the real part and b is the imaginary part.

- 4.1. $\frac{(6 + 4i)(3 - i)}{2i}$
 4.2. $3i(5 - 4i) + (6 + 2i)$
 4.3. $(2 + 3i)(1 - i) - (5 - 4i)$
 4.4. $\frac{(5 + 2i) + (4 - i)}{1 + i}$

4.5. $\frac{(2+i)^3}{(3+i)-(1+i)}$

4.6. $(\frac{6-3i}{2(1-i)})^2$

After attempting the questions above, please click [this link](#) to find the answers.

Version history and licensing

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