

CLASS 11

MATHS

EXTRA QUESTIONS

Class 11 Maths Chapter 4 Complex Numbers and Quadratic Equations – Extra Questions with Answers

Extra practice questions for Class 11 Maths Chapter 4 (Complex Numbers and Quadratic Equations), beyond the textbook. These Class 11 Maths Chapter 4 important questions are handy for last-minute exam practice.

Contents

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- Short Answer Questions (2–3 marks)
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Extra practice questions for Class 11 Maths Chapter 4 (Complex Numbers and Quadratic Equations), beyond the textbook. These Class 11 Maths Chapter 4 important questions are handy for last-minute exam practice.

Very Short Answer Questions (1 mark)

Q1. Simplify i^5 (i to the power 9).

Ans: $i^5 = i^4 \times i = 1 \times i = i$.

Q2. Find the modulus of $3+4i$.

Ans: $\sqrt{3^2+4^2} = \sqrt{25} = 5$.

Q3. Add $(2+3i)$ and $(4-i)$.

Ans: $6+2i$.

Q4. What is the discriminant of $x^2+x+1=0$?

Ans: $1^2-4(1)(1) = -3$.

Q5. Is the number 5 (with no i term) a complex number?

Ans: Yes, since it can be written as $5+0i$.

Short Answer Questions (2–3 marks)

Q6. Multiply $(2+3i)$ and $(1-2i)$, showing your work.

Ans: $(2+3i)(1-2i) = 2(1)+2(-2i)+3i(1)+3i(-2i) = 2-4i+3i-6i^2 = 2-i-6(-1) = 2-i+6 = 8-i$.

Q7. Solve $x^2+4=0$ for x, expressing the answer in terms of i.

Ans: $x^2=-4$, so $x=\pm\sqrt{-4}=\pm 2i$.

Q8. Find the roots of $x^2-2x+5=0$ using the quadratic formula.

Ans: $D = (-2)^2-4(1)(5) = 4-20 = -16$. $x = [2 \pm \sqrt{-16}]/2 = [2 \pm 4i]/2 = 1 \pm 2i$.

Higher-Order Thinking / Application Questions

Q9. If $z = 3+4i$, verify that $z \times \bar{z} = |z|^2$, showing all steps.

Ans: $\bar{z} = 3-4i$. $z \times \bar{z} = (3+4i)(3-4i) = 3^2-(4i)^2 = 9-16i^2 = 9-16(-1) = 9+16 = 25$. $|z|^2 = (\sqrt{3^2+4^2})^2 = (\sqrt{25})^2 = 25$. Both equal 25, confirming $z \times \bar{z} = |z|^2$.

Q10. A quadratic equation has one root $2+3i$. Using the fact that complex roots of a real-coefficient quadratic always occur in conjugate pairs, find the other root and construct the original quadratic equation.

Ans: The other root must be the conjugate, $2-3i$. Sum of roots = $(2+3i)+(2-3i) = 4$. Product of roots = $(2+3i)(2-3i) = 4-9i^2 = 4+9 = 13$. The quadratic equation (in the form $x^2-(\text{sum})x+(\text{product})=0$) is $x^2-4x+13=0$.

Class 11 Maths Chapter 4 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the [Class 11 Maths Chapter 4 Solutions](#) and [Class 11 Maths Chapter 4 Revision Notes](#).

See also: [Chapter 2](#) | [Chapter 3](#) | [Chapter 4](#)

Practice more: [Chapter 2](#) | [Chapter 3](#)

Quick revision: [Chapter 2](#) | [Chapter 3](#)

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