Specialist Mathematics Unit 1 & 2 — Practice Exam 1 — Answers & Explanations

Answers to the 15 questions in the free preview.

Specialist Mathematics

1. C. −1
By definition, $i^2 = -1$.

2. A. 5
The modulus is $\sqrt{(3^2 + 4^2)} = \sqrt{(9 + 16)} = \sqrt{25} = 5$.

3. A. 10
Magnitude = $\sqrt{(6^2 + 8^2)} = \sqrt{(36 + 64)} = \sqrt{100} = 10$.

4. C. 0
Perpendicular vectors always have a dot product of 0.

5. B. 13
$|a + bi| = \sqrt{(a^2 + b^2)} = \sqrt{(5^2 + (-12)^2)} = \sqrt{(25 + 144)} = \sqrt{169} = 13$.

6. C. 13
Modulus = $\sqrt{(5^2 + 12^2)} = \sqrt{169} = 13$.

7. B. 10
Modulus = $\sqrt{(8^2 + 6^2)} = \sqrt{100} = 10$.

8. A. 3 − 1i
Add the real parts: 2 + 1 = 3. Add the imaginary parts: 3 + (−4) = −1, giving 3 − 1i.

9. D. 3 − 5i
Subtract the real parts: 4 − 1 = 3. Subtract the imaginary parts: −2 − 3 = −5, giving 3 − 5i.

10. B. −i
$i^3 = i^2 \times i = (-1) \times i = -i$.

11. B. 5 + 3i
The complex conjugate flips the sign of the imaginary part: 5 − 3i becomes 5 + 3i.

12. D. Horizontal axis
By convention, the real part is plotted on the horizontal axis and the imaginary part on the vertical axis.

13. D. 5
Magnitude = $\sqrt{(3^2 + 4^2)} = \sqrt{25} = 5$.

14. B. 41
$|v| = \sqrt{(9^2 + 40^2)} = \sqrt{(81 + 1600)} = \sqrt{1681} = 41$.

15. B. 13
Magnitude = $\sqrt{(5^2 + 12^2)} = \sqrt{169} = 13$.

PrepNest

PREVIEW

That’s the end of the preview answers

These are the answers to the 15 preview questions. The full answer key covers all 30 questions in Specialist Mathematics Unit 1 & 2 — Practice Exam 1, with the working behind every mark.

STILL TO COME	QUESTIONS	MARKS
Specialist Mathematics	15	15

The full paper comes with

- Every question, printed exactly like the ones in this preview
- The complete answer key, with the working behind every mark
- A topic report after marking, showing what to practice next

Get the full paper at

prepnest.com.au/practice/exams/specialist_maths-year_11-1

PrepNest