

PART 1 - MATHEMATICS

Topic : Trigonometric functions

SECTION-1 : (Maximum Marks : 8)

- This section contains **TWO** questions.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value of the answer (in decimal notation, truncated / rounded-off to the **SECOND DECIMAL PLACE**; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30) in the place designated to enter the answer.
- Answer to each question will be evaluated according to the following marking scheme :
Full Marks : +4 If ONLY the correct answer is entered;
Zero Marks : 0 In all other cases.

1. Let

$$\alpha = \left(1 - 2\cos\left(\frac{\pi}{11}\right)\right)\left(1 - 2\cos\left(\frac{3\pi}{11}\right)\right)\left(1 - 2\cos\left(\frac{9\pi}{11}\right)\right) \\ \left(1 - 2\cos\left(\frac{27\pi}{11}\right)\right)\left(1 - 2\cos\left(\frac{81\pi}{11}\right)\right).$$

Then the value of $5 - \alpha^2$ is _____.

[JEE Advanced 2026 Paper 1]

Scan or tap for the
full solution



2. Let

$$\alpha = \frac{1}{\sin 60^\circ \sin 61^\circ} + \frac{1}{\sin 62^\circ \sin 63^\circ} + \dots + \frac{1}{\sin 118^\circ \sin 119^\circ}.$$

Then the value of

$$\left(\frac{\operatorname{cosec} 1^\circ}{\alpha}\right)^2$$

is _____.

[JEE Advanced 2025 Paper 2]

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full solution



Space for Rough Work

**JEE ADVANCED TRIGONOMETRIC FUNCTIONS —
TRANSFORMATION FORMULAE (PRODUCT ↔ SUM) —
PYQS**

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-1

Ques.	1	2													
Ans.	3.9 to 4.1	3													