

QUIZ (5%)

HARMONIC SERIES





Question 1

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What mathematical function appears repeatedly in the series?

$$f(x) = c_0 + c_1 \sin(x + \alpha_1) + c_2 \sin(2x + \alpha_2) + c_3 \sin(3x + \alpha_3) + \dots$$

Cosine

Sine

Tangent

Logarithm

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Question 2

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Given a standard form Fourier series representation by harmonic series

$$f(x) = c_0 + c_1 \sin(x + \alpha_1) + c_2 \sin(2x + \alpha_2) + c_3 \sin(3x + \alpha_3) + \dots$$

Choose the correct answer.

$$c_0 = \frac{b_0}{2}$$

$$a_0 = \frac{1}{12} \sum_{r=1}^{12} f(x_r)$$

$$c_n = \sqrt{a_n + b_n}$$

$$a_0 = \frac{1}{6} \sum_{r=1}^{12} f(x_r)$$

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Question 3

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What is the period of the function $f(x)$?

π

$\frac{\pi}{2}$

2π

4π

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Question 4 - +

In which quadrant is the angle

$$A = \alpha = \tan^{-1} \frac{a_1}{b_1}$$

when both $a_1 > 0$ and $b_1 > 0$?

1st Quadrant

3rd Quadrant

2nd Quadrant

4th Quadrant

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Question 5

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What is used to help determine the correct angle A in each case?

Radius

Slope

Reference angle

Frequency