



SEQUENCES & SERIES

20 TRICK-BASED QUESTIONS

JEE Main • Handpicked for Smart Preparation

SHORTCUTS

Save time with smart observations

PATTERN RECOGNITION

Spot the structure before calculating

EXAM PRACTICE

One question • One page • Focused practice

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Selected from the source Sequences & Series question bank

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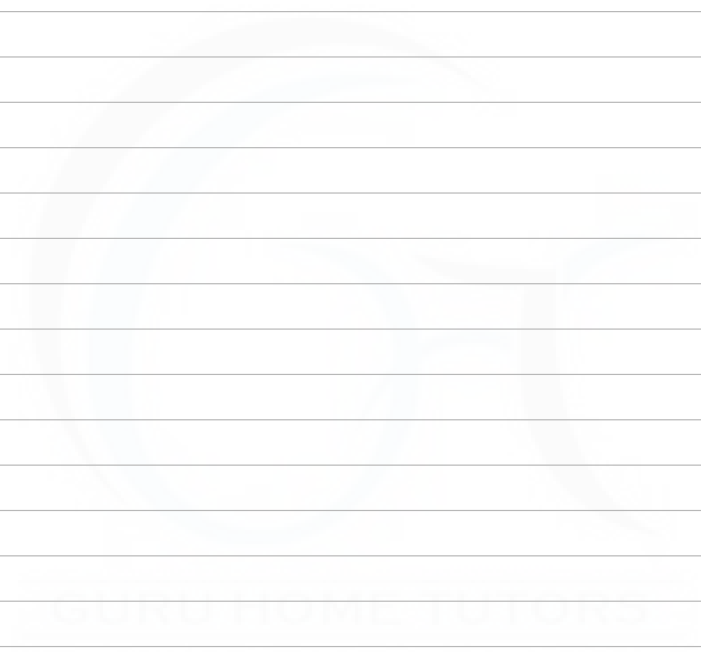
Question3

In a G.P., if the product of the first three terms is 27 and the set of all possible values for the sum of its first three terms is $\mathbb{R} - (a, b)$, then $a^2 + b^2$ is equal to

_____ .

JEE Main 2026 (Online) 28th January Morning Shift

WORKING SPACE



CORRECT ANSWER

90

Question 16

$$\frac{6}{3^{26}} + \frac{10 \cdot 1}{3^{25}} + \frac{10 \cdot 2}{3^{24}} + \frac{10 \cdot 2^2}{3^{23}} + \dots + \frac{10 \cdot 2^{24}}{3} \text{ is equal to :}$$

JEE Main 2026 (Online) 28th January Evening Shift

Options:

A.

226

B.

 3^{25}

C.

3²⁶

D.

2²⁵

WORKING SPACE

CORRECT ANSWER

A

$$\sum_{n=1}^{10} \left(\frac{528}{n(n+1)(n+2)} \right) \text{ is equal to:}$$

440

B

The sum $1 + \frac{1}{2}(1^2 + 2^2) + \frac{1}{3}(1^2 + 2^2 + 3^2) + \dots$ upto 10 terms is equal to :

Options:

130

B.

155

C.

$$\frac{315}{2}$$

D.

$$\frac{325}{2}$$

WORKING SPACE

CORRECT ANSWER

C

Let $\langle a_n \rangle$ be a sequence such that $a_0 = 0, a_1 = \frac{1}{2}$ and $2a_{n+2} = 5a_{n+1} - 3a_n, n = 0, 1, 2, 3, \dots$. Then $\sum_{k=1}^{100} a_k$ is equal to

Options:

- A. $3a_{100} + 100$
B. $3a_{100} - 100$
C. $3a_{99} - 100$
D. $3a_{99} + 100$

WORKING SPACE

CORRECT ANSWER

B

Consider an A. P. of positive integers, whose sum of the first three terms is 54 and the sum of the first twenty terms lies between 1600 and 1800. Then its 11th term is :

Options:

108

90

C.

122

D.

84

WORKING SPACE

CORRECT ANSWER

B

The number of common terms in the progressions 4, 9, 14, 19,....., up to 25th term and 3, 6, 9, 12, up to 37th term is :

Options:

9

5

7

8

C

The sum of the series $\frac{1}{1-3 \cdot 1^2+1^4} + \frac{2}{1-3 \cdot 2^2+2^4} + \frac{3}{1-3 \cdot 3^2+3^4} + \dots$ up to 10 terms is

Options:

45/109

$$-\frac{45}{109}$$

55/109

$$-\frac{55}{109}$$

WORKING SPACE

D

If three successive terms of a G.P. with common ratio $r(r > 1)$ are the lengths of the sides of a triangle and $[r]$ denotes the greatest integer less than or equal to r , then $3[r] + [-r]$ is equal to :

WORKING SPACE

1

Let $a_1, a_2, a_3, \dots$ be a GP of increasing positive numbers. If the product of fourth and sixth terms is 9 and the sum of fifth and seventh terms is 24, then

[29-Jan-2023 Shift 1]

60

Question87

Let $a_1, a_2, \dots, a_n$ be in A.P. If $a_5 = 2a_7$ and $a_{11} = 18$, then

$$12 \left(\frac{1}{\sqrt{a_{10}} + \sqrt{a_{11}}} + \frac{1}{\sqrt{a_{11}} + \sqrt{a_{12}}} + \dots + \frac{1}{\sqrt{a_{17}} + \sqrt{a_{18}}} \right)$$

is equal to _____.
[31-Jan-2023 Shift 1]

WORKING SPACE

CORRECT ANSWER

8

The sum to 10 terms of the series $\frac{1}{1+1^2+1^4} + \frac{2}{1+2^2+2^4} + \frac{3}{1+3^2+3^4} + \dots$ is:-
[1-Feb-2023 Shift 1]

A. $\frac{59}{111}$

B. $\frac{55}{111}$

C. $\frac{56}{111}$

D. $\frac{58}{111}$

B

If $(20)^{19} + 2(21)(20)^{18} + 3(21)^2(20)^{17} + \dots + 20(21)^{19} = k(20)^{19}$, then k is equal to _____

[6-Apr-2023 shift 2]

400

Let a_n be the n^{th} term of the series $5 + 8 + 14 + 23 + 35 + 50 + \dots$ and $S_n = \sum_{k=1}^n a_k$.

[8-Apr-2023 shift 2]

D. 11310

C

If $f(x) = \frac{(\tan 1^\circ)x + \log_e(123)}{x \log_e(1234) - (\tan 1^\circ)}$, $x > 0$, then the least value of $f(f(x)) + f\left(f\left(\frac{4}{x}\right)\right)$ is:

D. 0

B

Let a, b, c and d be positive real numbers such that $a + b + c + d = 11$. If the maximum value of $a^5 b^3 c^2 d$ is 3750β , then the value of β is
[11-Apr-2023 shift 2]

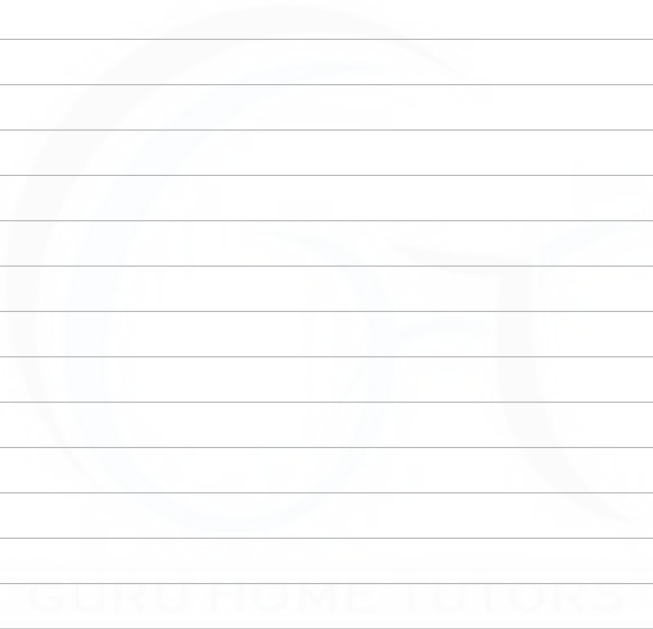
D. 110

C

Question 113

The sum to 20 terms of the series $2 \cdot 2^2 - 3^2 + 2 \cdot 4^2 - 5^2 + 2 \cdot 6^2 - \dots$ is equal to _____.
[13-Apr-2023 shift 1]

WORKING SPACE

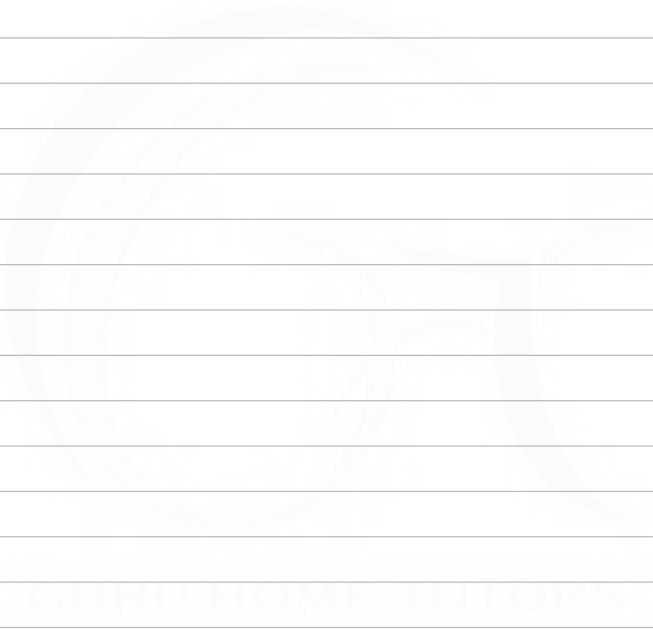
**CORRECT ANSWER****1310**

Question 166

Let $\frac{1}{16}$, a and b be in G. P. and $\frac{1}{a}$, $\frac{1}{b}$, 6 be in (a) P., where $a, b > 0$. Then, $72(a + b)$ is equal to

[2021, 16 March Shift-II]

WORKING SPACE

**CORRECT ANSWER****14**

