

IB Mathematics: Analysis and Approaches – SL

Paper 1 Practice Paper

Total marks: 46 No calculator

[Maximum mark: 4]

(a) Write down the radius of the moon.

$$[1]$$

Find the value of b and the value of a .

[3]

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2.

[Maximum mark: 3]

Solve the simultaneous equations.

[3]

$$\begin{cases} 2x + 3y = 13 \\ 4x - y = 5 \end{cases}$$

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3.

[Maximum mark: 4]

Find the coefficient of x^6 in the expansion of $(3x - 2)^{10}$.

[4]

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4.

[Maximum mark: 6]

Solve the following equations.

$$(a) \ 2^{x+1} = 16 \qquad [2]$$

(b) $5^{2x} = 125$ [2]

(c) $3^x \times 3^2 = 27^x$ [2]

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5.

[Maximum mark: 5]

Given that $\log_{10} m = \frac{2}{3}$, where $m > 0$, find the value of

$$(a) \log_{10} \left(\frac{1}{m} \right)$$

[2]

(b) $\log_{10000} m$

[3]

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6. [Maximum mark: 5]

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(a) Show that $(2n - 3)^2 + (2n - 1)^2 = 8n^2 - 16n + 10$, where $n \in \mathbb{Z}$. [2]

(b) Hence, prove that the sum of the squares of any two consecutive odd integers is even.
[3]

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[Maximum mark: 6]

(a) Show that $u_1 = 9$. [2]

(b) Prove that the sum of the first n terms of this arithmetic sequence is a square number.

[4]

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8. [Maximum mark: 6]

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Find the term independent of x in the expansion of $\frac{1}{x^4} \left(\frac{1}{2x^2} - \frac{x}{2} \right)^7$. [6]

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9.

[Maximum mark: 7]

Solve the simultaneous equations.

[7]

$$\log_3(9x) = 1 + 2\log_3 y$$

$$1 + \log_9 x = \log_9(15y - 18)$$

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