IB MATH AA SL PRACTICE EXAM-I

Most Common Ib Exam
10 QUESTIONS

[Maximum mark: 7] 

An arithmetic sequence is given by 3, 5, 7, ...

(a) Write down the value of the common difference, d. [1]

(b) Find

(i) u_{10};

(ii) S_{10}. [4]

(c) Given that $u_n = 253$, find the value of n. [2]

[Maximum mark: 6]

Let $a = \log_5 b$, where $b > 0$. Write down each of the following expressions in terms of a.

(a) $\log_5 b^4$ [2]

(b) $\log_5(25b)$ [2]

(c) $\log_{25} b$ [2]

[Maximum mark: 6]

Consider the expansion of $(2x - 1)^9$.

(a) Write down the number of terms in this expansion. [1]

(b) Find the coefficient of the term in x^2. [5]

[Maximum mark: 6]

In an arithmetic sequence, $u_4 = 12$, $u_{11} = -9$.

(a) Find the common difference. [2]

(b) Find the first term. [2]

(c) Find the sum of the first 11 terms in the sequence. [2]

[Maximum mark: 5]

The third term in the expansion of $(x+p)^8$ is $252x^6$. Find the possible values of p.

[Maximum mark: 6]

(a) Show that $(2n-1)^3+(2n+1)^3=16n^3+12n$ for $n \in \mathbb{Z}$. [3]

(b) Hence, or otherwise, prove that the sum of the cubes of any two consecutive odd integers is divisible by four. [3]

[Maximum mark: 6]

(a) Write down the value of

(i) $\log_2 8$;

(ii) $\log_5 \left(\frac{1}{25}\right)$;

(iii) $\log_9 3$. [3]

(b) Hence solve $\log_2 8 + \log_5 \left(\frac{1}{25}\right) + \log_9 3 = \log_{16} x$. [3]

[Maximum mark: 7]

The first three terms of a geometric sequence are $u_1 = 0.8$, $u_2 = 2.4$, $u_3 = 7.2$.

(a) Find the value of the common ratio, r. [2]

(b) Find the value of S_8. [2]

(c) Find the least value of n such that $S_n > 35\,000$. [3]

[Maximum mark: 6]

On 1st of January 2022, Grace invests $\$P$ in an account that pays a nominal annual interest rate of 6%, **compounded quarterly**.

The amount of money in Grace's account **at the end of each year** follows a geometric sequence with common ratio, α.

(a) Find the value of α, giving your answer to four significant figures. [3]

Grace makes no further deposits or withdrawals from the account.

(b) Find the year in which the amount of money in Grace's account will become **triple** the amount she invested. [3]

[Maximum mark: 6]

Jack rides his bike to work each morning. During the first minute, he travels 160 metres. In each subsequent minute, he travels 80% of the distance travelled during the previous minute.

The distance from his home to work is 750 metres. Jack leaves his house at 8:30 am and must be at work at 8:40 am.

Will Jack arrive to work on time? Justify your answer.