



Course: IB Higher Level Math 2

Teacher Names: Mrs. Short



Assignment Title: IBHL2 – Summer Assignment

Assignment Summary/Purpose:

This assignment contains selected review problems on previously taught material. The purpose of this assignment is for student review/retention of learned concepts.



Due date

Assigned during:	June 2011
Due Date:	First day of class in September 2011

Estimated time needed to complete the assignment: Approximately 2-3 hours

Description of how the assignment will be assessed:

The assignment will be collected and graded for completion and accuracy. The assignment will then be returned to the student to make corrections. After approximately two class sessions the assignment will then be turned in again and graded for accuracy. The overall grade on the assignment will be a combination of the first “completion” grade and the second “accuracy” grade.

Grade impact to overall course grade:

The assignment will count as a quiz grade in the first quarter gradebook.

Tools/resources needed to complete the assignment:

Graphing calculator, Precalculus book (already given to students), your IBHL 1 notebook/material

Contacts:

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- 7.
- (a) The sum of the first six terms of an arithmetic series is 81. The sum of its first eleven terms is 231. Find the first term and the common difference.
 - (b) The sum of the first two terms of a geometric series is 1 and the sum of its first four terms is 5. If all of its terms are positive, find the first term and the common ratio.
 - (c) The r^{th} term of a new series is defined as the product of the r^{th} term of the arithmetic series and the r^{th} term of the geometric series above. Show that the r^{th} term of this new series is $(r+1)2^{r-1}$.
 - (d) Using mathematical induction, prove that

$$\sum_{r=1}^n (r+1)2^{r-1} = n2^n, \quad n \in \mathbb{Z}^+.$$

10. Tim goes to a popular restaurant that does not take any reservations for tables. It has been determined that the waiting times for a table are normally distributed with a mean of 18 minutes and standard deviation of 4 minutes.
- (a) Tim says he will leave if he is not seated at a table within 25 minutes of arriving at the restaurant. Find the probability that Tim will leave without being seated.
- (b) Tim has been waiting for 15 minutes. Find the probability that he will be seated within the next five minutes.

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11. Find all the values of θ in the interval $[0, \pi]$ which satisfy the equation

$$\cos 2\theta = \sin^2 \theta.$$

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12. Two lines are defined by

$$l_1: r = \begin{pmatrix} -3 \\ -4 \\ 6 \end{pmatrix} + \lambda \begin{pmatrix} 3 \\ 2 \\ -2 \end{pmatrix} \text{ and } l_2: \frac{x-4}{-3} = \frac{y+7}{4} = -(z+3).$$

- (a) Find the coordinates of the point A on l_1 and the point B on l_2 such that \vec{AB} is perpendicular to both l_1 and l_2 . *(email me for a hint if you need to!)*
- (b) Find $|AB|$.
- (c) Find the Cartesian equation of the plane Π which contains l_1 and does not intersect l_2 .

13. Solve, for x , the equation $\log_2(5x^2 - x - 2) = 2 + 2 \log_2 x$.

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14. The solution of $2^{2x+3} = 2^{x+1} + 3$ can be expressed in the form $a + \log_2 b$ where $a, b \in \mathbb{Z}$. Find the value of a and of b .

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