AH Sequences + Series Unit 2. Homework

Homework (8).

NAB Practice Questions

① For the arithmetic sequence 10, 13, 16, ... 112 find
(a) the number of terms
(b) the sum of these terms.

② For the geometric sequence 972, 324, 108, ... find
(a) the 7th term
(b) an expression for the sum of n terms.

Exam Practice Questions.

③ Three consecutive terms in a geometric sequence are c, $c+4$ and $c+6$, in that order. Determine the value of c and the value of the common ratio.

④ In a certain arithmetic sequence the sum of the first and fifth terms is 18 and the fifth term is 6 more than the third term. Show that the sum of the first ten terms is 165

PTO

⑤ [2006]

The first three terms of a geometric sequence are

$$\frac{x(x+1)}{(x-2)}, \quad \frac{x(x+1)^2}{(x-2)^2} \text{ and } \frac{x(x+1)^3}{(x-2)^3}, \text{ where } x<2.$$

(*a*) Obtain expressions for the common ratio and the *n*th term of the sequence. **3**

(*b*) Find an expression for the sum of the first *n* terms of the sequence. **3**

(*c*) Obtain the range of values of *x* for which the sequence has a sum to infinity and find an expression for the sum to infinity. **4**

⑥ [2004]

(*a*) Obtain the sum of the series 8 + 11 + 14 + . . . + 56. **2**

(*b*) A geometric sequence of positive terms has first term 2, and the sum of the first three terms is 266. Calculate the common ratio. **3**

(*c*) An arithmetic sequence, *A*, has first term *a* and common difference 2, and a geometric sequence, *B*, has first term *a* and common ratio 2. The first four terms of each sequence have the same sum. Obtain the value of *a*. **3**

Obtain the smallest value of *n* such that the sum to *n* terms for sequence *B* is more than **twice** the sum to *n* terms for sequence *A*. **2**