1: Given that a, b and c are positive integers such that

- $c = a^2 - 1$
- $a + b + c = 20$

prove, by exhaustion, that the product abc is always a multiple of 6

You may use the table below to illustrate your answer.

(3)

You may not need to use all rows of this table.

a	b	c	abc

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Question 1 continued

(Total for Question 1 is 3 marks)

2: A geometric series has first term a and common ratio r.

Given that

- the third term in the series is 64
- the sixth term in the series is –8

(a) show that $r = -\frac{1}{2}$

(2)

(b) find the sum to infinity of the series.

(4)

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