8 The first three terms of a geometric progression are a, b and c respectively, where a, b and c are positive constants. The first three terms of an arithmetic progression are a, b and $-3c$ respectively.

(a) Show that $a^2 - 10ac + 9c^2 = 0$. [3]

It is now given that $a = 9$ and c takes the smaller of its two possible values.

(b) **(i)** Find the sum to infinity of the geometric progression. [5]

(ii) Find the sum of the first 20 terms of the arithmetic progression. [3]