Question 8 **(9 marks)**

Yash is saving for a deposit on an apartment, which is about to begin construction.

(a)   Two saving plans are found in advertisements in a newspaper.
Option 1: 3.05% per annum compounded at the end of each month.
Option 2: 3.01% per annum compounded at the end of each day.

Which of these two options would give the better return? Justify your answer
mathematically.   (3 marks)

Yash locates a better investment option online. This offers 3.5% per annum compounded at the end of each day. Yash will begin with an initial deposit of $12 300 and a weekly deposit of $300. The deposit required to secure the apartment in 12 months is $30 000.

(b)   (i)   Show that this option will not be sufficient to reach the total needed to secure the apartment. State how far short of the required amount this option will be. (4 marks)

(ii)   Determine what the weekly deposit needs to be for a total of $30 000 to be achieved by the end of 12 months.   (2 marks)