Question 6 **(6 marks)**

The population of turtles in an artificial lake at a wildlife sanctuary is initially 32 and research has shown a natural decrease in population of 50% each year. Twenty extra turtles are introduced to the lake at the end of each year.

(a)   Determine a recursive rule for the turtle population.   (2 marks)

(b)   Determine the long-term steady state of the turtle population.   (2 marks)

(c)   If the wildlife sanctuary preferred a long-term steady state of 80 turtles, what yearly addition of turtles would be required to produce this steady state? Assume all other conditions remain the same.   (2 marks)