1.  You are given the following sequence of numbers $\frac{1}{8}, \frac{1}{4}, \frac{1}{2}, 1, 2, 4, \ldots$ :

    a.  Determine the 14th term in this sequence. Show/explain how you determined the 14th term.

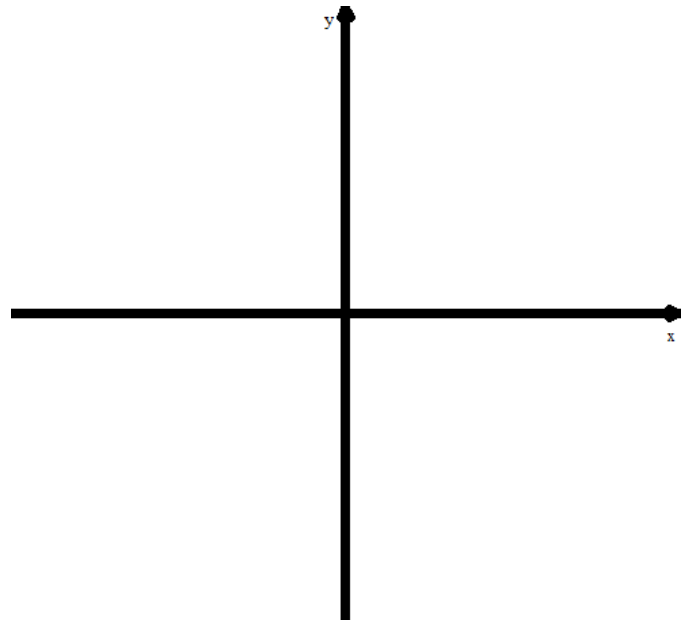    (2 marks)

    b.  Yousef likes to work with formulas, so he wants a formula/equation so that he can predict the 42nd term. Show/explain a formula that he can use.  (DO NOT work out what the 42nd term is!!!)

    (1 mark)

2.  Graph the function $f(x) = 3^x - 27$. Label the x- and y-intercepts as well as the asymptote (include its equation in your graph)

    (5 marks)

3. Explain what the expression $\left(\dfrac{3}{4}\right)^5$ **_MEANS_**.

(1 mark)

4. Mr. bought a car that was originally worth $45,000. The value of the car has been decreasing exponentially at a rate of 15% every year.

   a. What will be the value of the car 6 years after I first bought the car? Show/explain how you worked out your answer. (Record final answer to two decimals places)

(3 marks)

   b. How much time will it take before the car is worth $25,000? Show/explain how you worked out your answer. (Round final answer to one decimal place).

(2 marks)