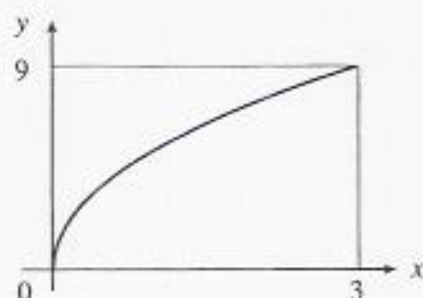


Answer **all** the questions

1. (a) Suggest a possible equation for the graph in the figure.



[3]

- (b) Use your graphics calculator to find the coordinates of the point of intersection of the graphs of  $y = x^2$  and  $y = x + \frac{2}{x}$ . Give your answer correct to two decimal places.

[2]

- (c) Use your calculator to find  $x_5$ , the fifth term of the sequence defined by the recurrence relation

$$x_{n+1} = 4x_n(1 - x_n) \quad \text{with} \quad x_1 = 0.4.$$

Give your answer correct to six decimal places.

[2]

2. A student has designed an algorithm, *Sum*, to calculate the sum of the first hundred odd numbers, and is testing it by hand to check that it gives the correct result for the first three odd numbers.

**Algorithm Sum**

**Input** None

$1 \rightarrow N$

$1 \rightarrow T$

$0 \rightarrow S$

**repeat**

$S + T \rightarrow S$

$T + 2 \rightarrow T$

$N + 1 \rightarrow N$

**until**  $N \geq 3$

**display**  $S$

**Output**  $S$ , the sum of the first three odd numbers.

- (a) Draw up a table to show the values in each store as the algorithm is executed, and give the value of the final output.

[4]