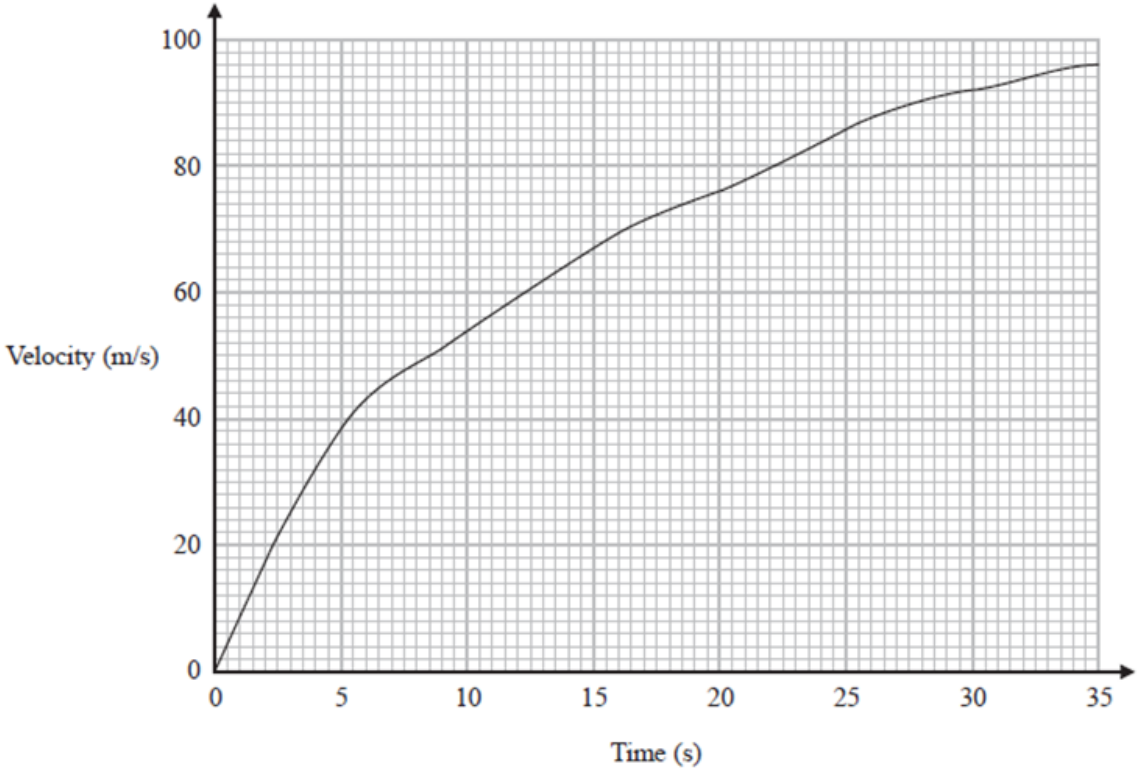
NON LINEAR GRAPHS

QUESTION 1

Here is a velocity-time graph for an rocket.



Work out an estimate for the distance the rocket travelled in the first 20 seconds.
Use 4 strips of equal width.

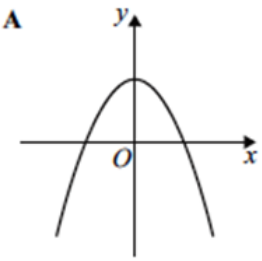
..... m

(3 marks)

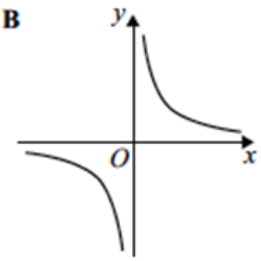
QUESTION 2

Here are some graphs.

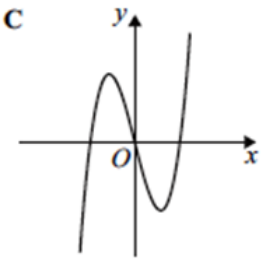
A



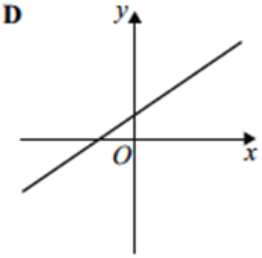
B



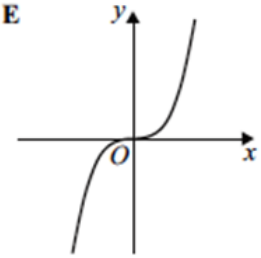
C



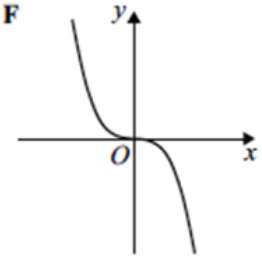
D



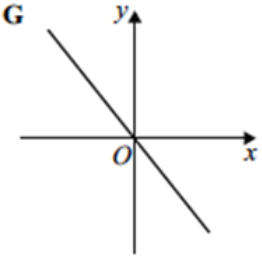
E



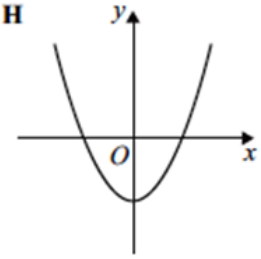
F



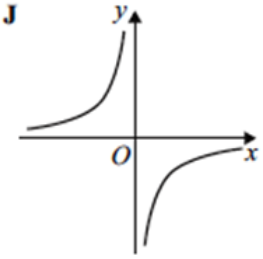
G



H



J



Write down the letter of the graph that could have the equation

(i) $y = -x$

.....

(1)

(ii) $y = x^3$

.....

(1)

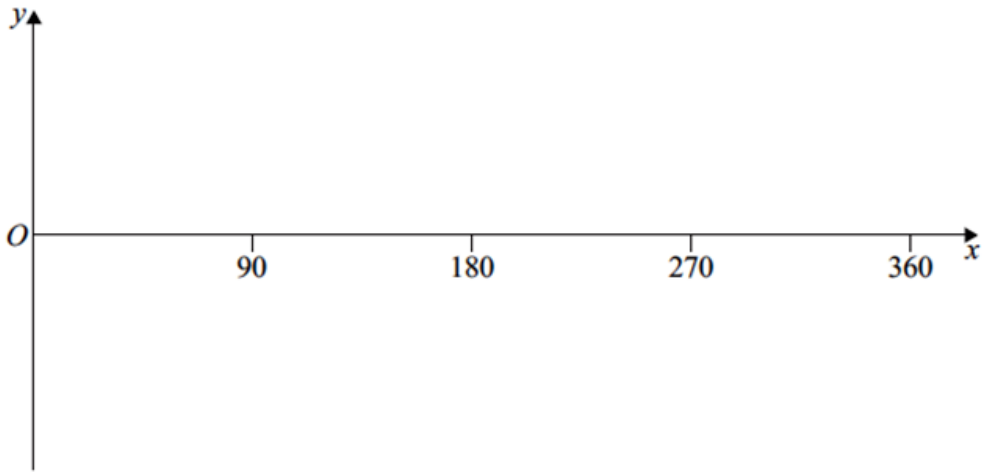
(iii) $y = x^3 - 2x$

.....

(1)

QUESTION 2

(a) Sketch the graph of $y = \cos x°$ for $0 \leq x \leq 360$



(2)

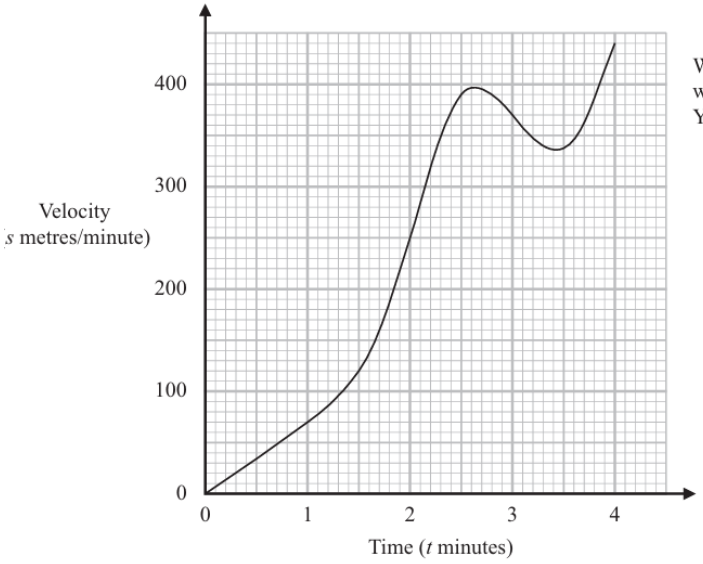
(b) Solve the equation $2 \cos x° = -1$ for $0 \leq x \leq 360$

.....

(2)

QUESTION 3

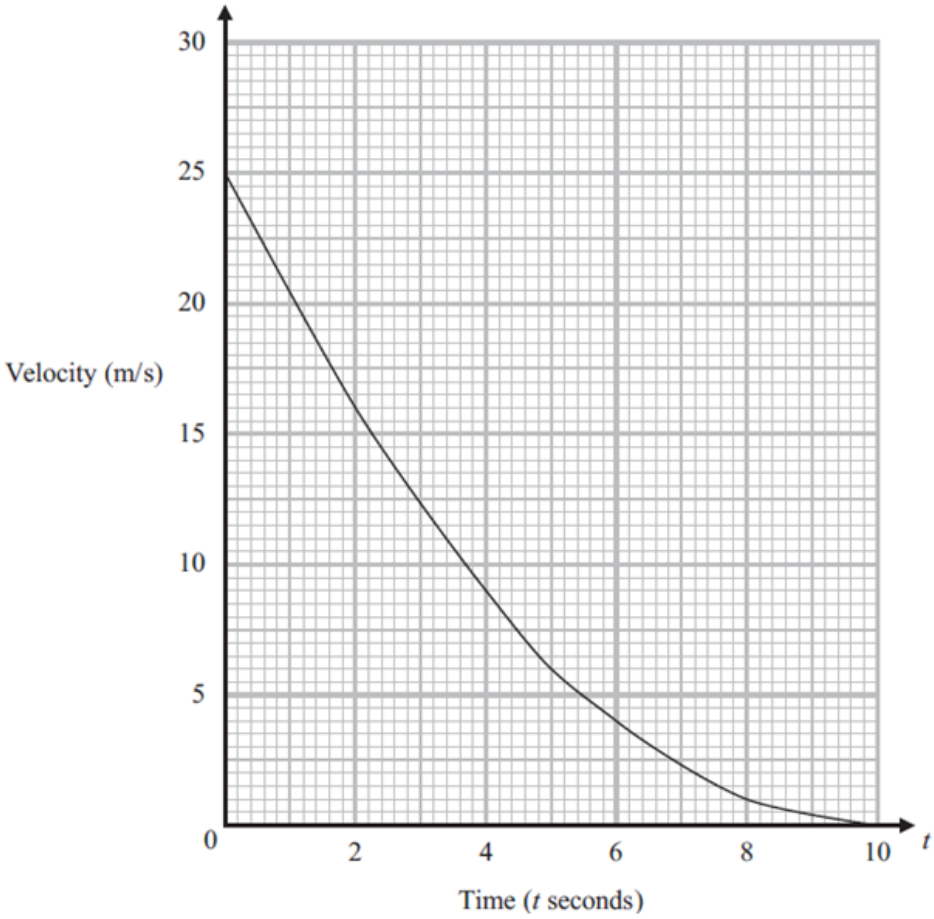
Here is the velocity–time graph for an object.



Work out an estimate for the acceleration, in metres/minute^2, of the object when $t = 1.5$
You must show how you get your answer.

QUESTION 4

The graph shows the velocity of a van, in metres per second, t seconds after it starts to slow down.



(a) Calculate an estimate for the acceleration of the van when $t = 6$
You must show all your working.

..... m/s^2
(3)

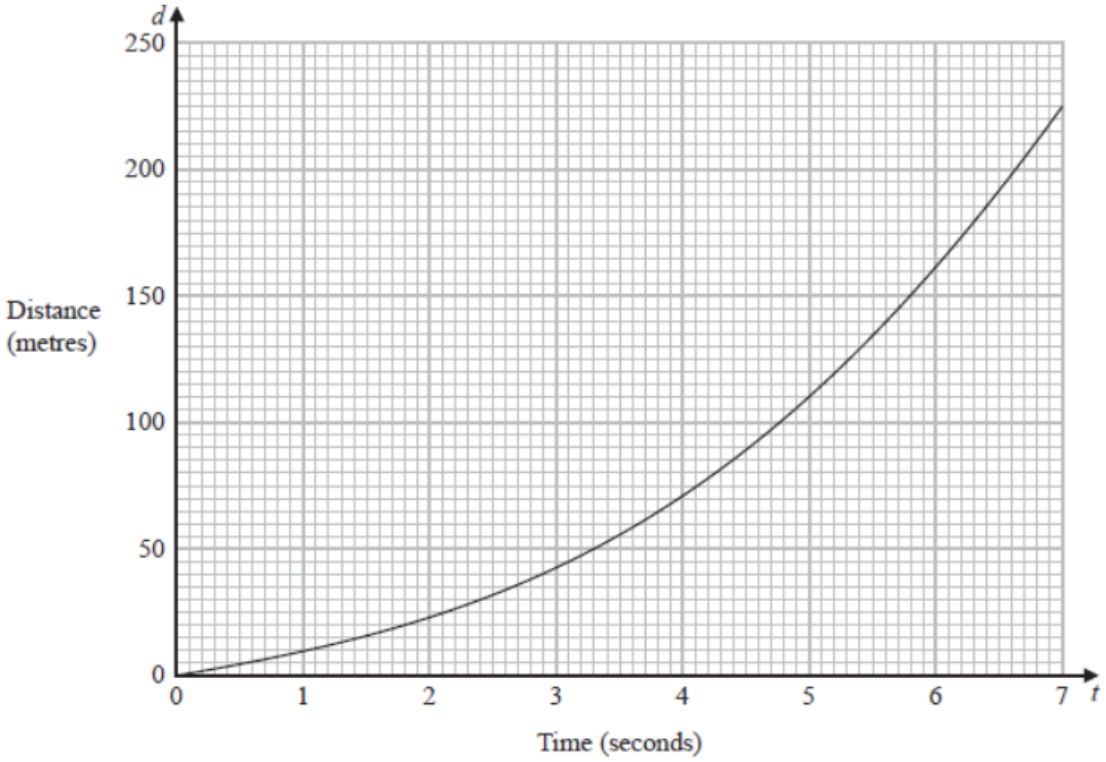
(b) Work out an estimate for the distance the van travels in the first 4 seconds after it starts to slow down.
Use 4 strips of equal width.

..... m
(3)

Question 5

A car accelerates from rest.

Here is the distance-time graph for the distance (d metres) covered by the car t seconds after it starts to move.



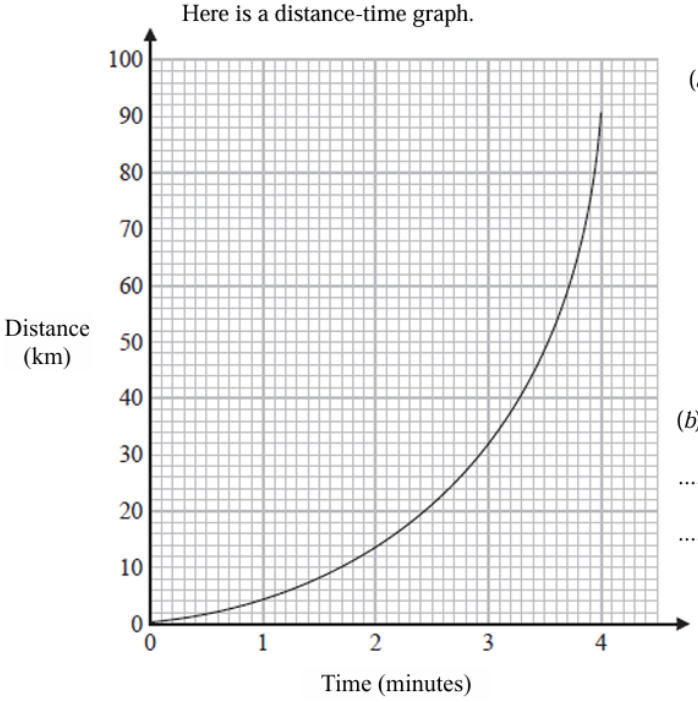
Work out an estimate for the gradient of the graph at $t = 5$
You must show how you get your answer.

.....

(3 marks)

Question 6

Here is a distance-time graph.



(*a*) Find an estimate of the gradient of the graph at time 3 minutes.
You must show how you get your answer.

.....

(3)

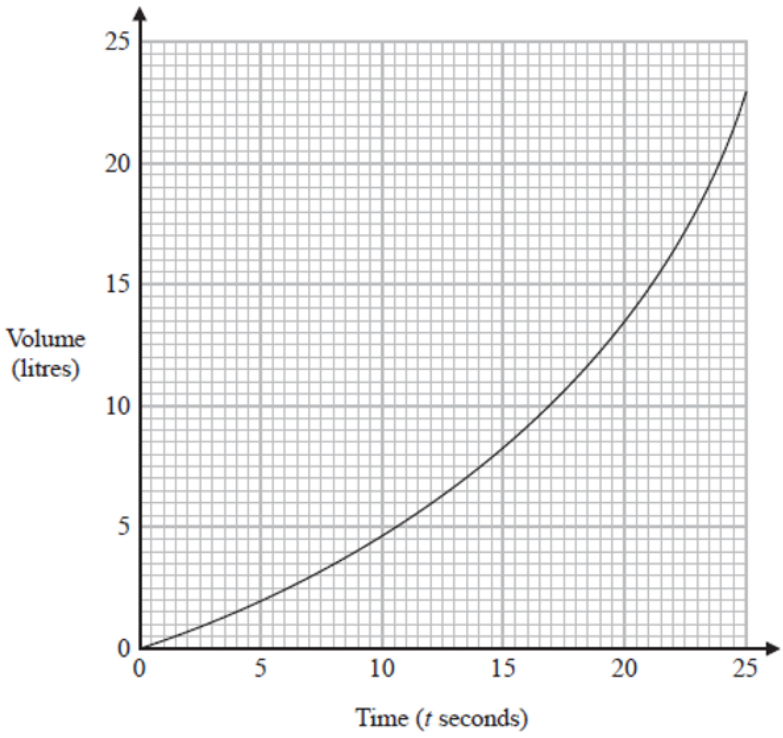
(*b*) What does the gradient of the graph represent?

.....

.....

Question 7

The graph below gives the volume, in litres, of gas in a balloon t seconds after the gas starts to fill the balloon.



(a) Calculate an estimate for the gradient of the graph when $t = 20$
You must show how you get your answer.

(b) Describe fully what the gradient in part (*a*) represents.

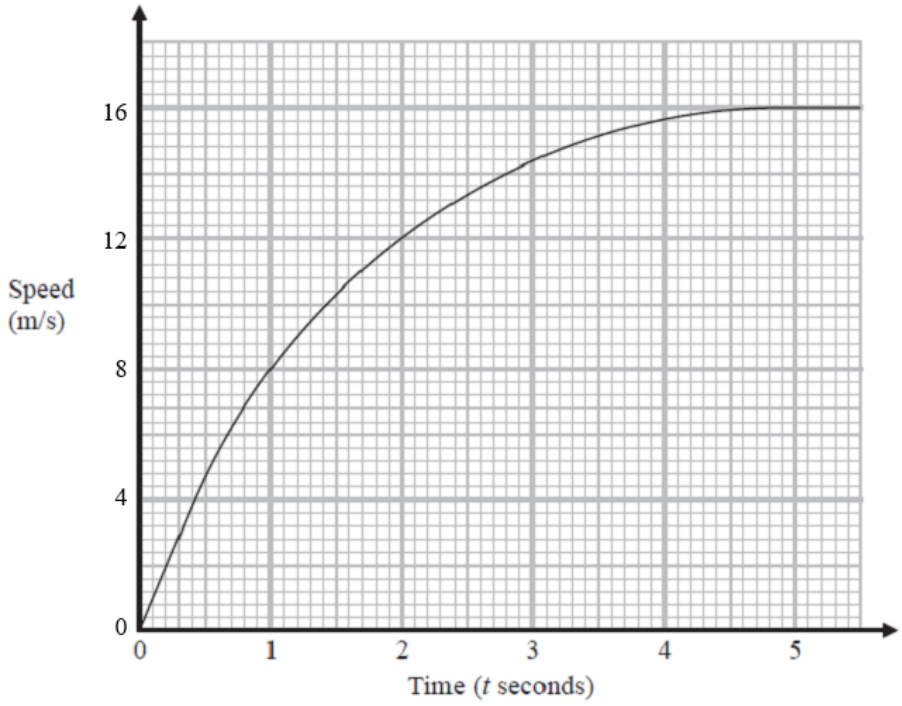
.....

.....

(1)

Question 8

Here is a speed-time graph showing the speed, in metres per second, of an object *t* seconds after it started to move from rest.



(*a*) Using 3 trapeziums of equal width, work out an estimate for the area under the graph between $t = 2$ and $t = 5$

(3)

(*b*) What does this area represent?

.....

.....

(1)