

1MA1 Higher themed papers: Match the graph to equation

Write your name here	
Surname	Other names
Centre Number	Candidate Number
Pearson Edexcel Level 1/Level 2 GCSE (9–1)	
Mathematics	
Match the graph to equation	
[Ctrl]	
	Paper Reference 1MA1
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.	Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

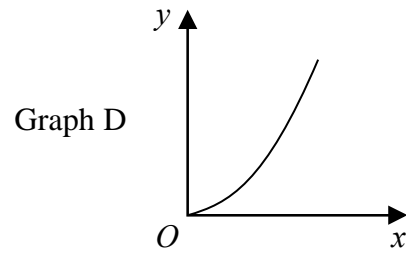
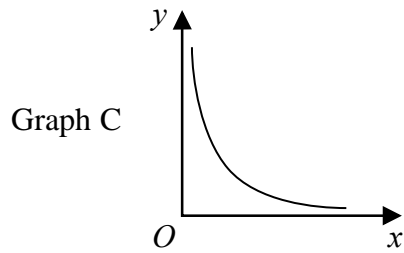
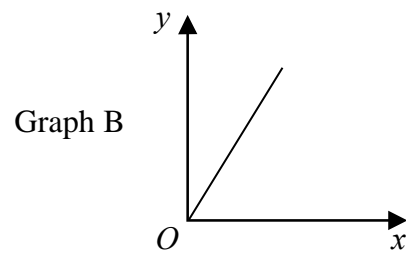
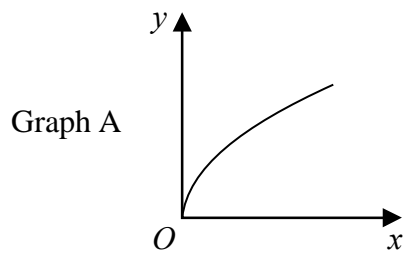
- The total mark for this paper is **21**. There are **8** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

1MA1 Higher themed papers: Match the graph to equation

1



The graphs of y against x represent four different types of proportionality.

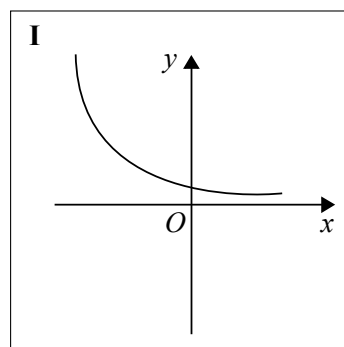
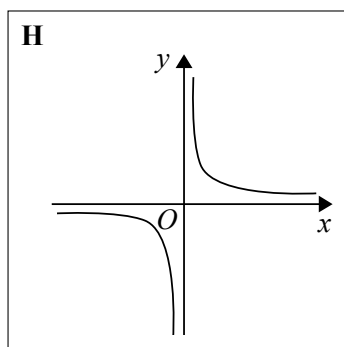
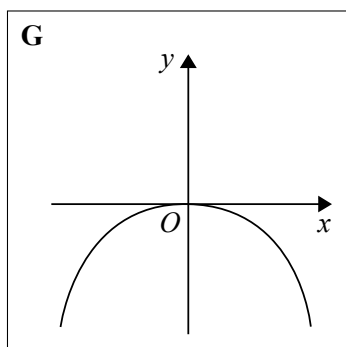
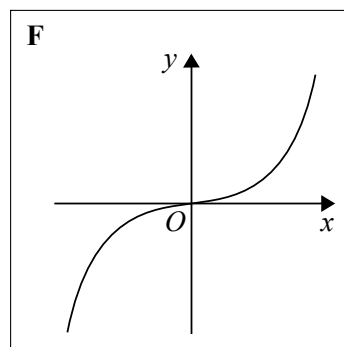
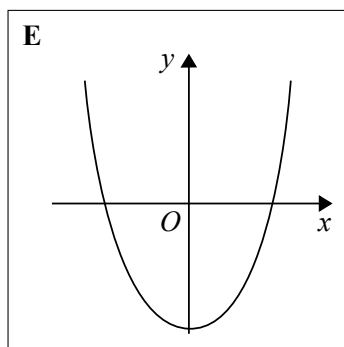
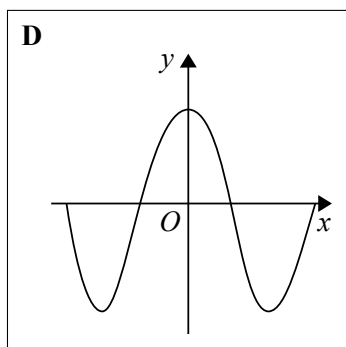
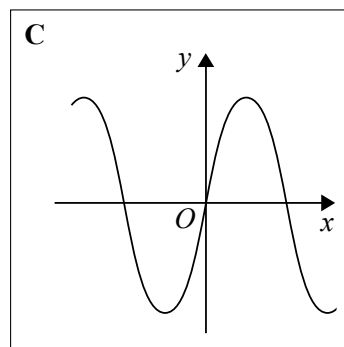
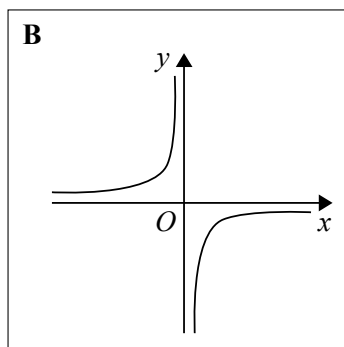
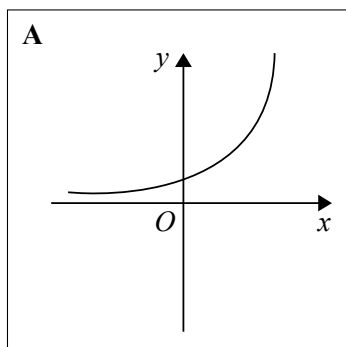
Match each type of proportionality in the table to the correct graph.

Type of proportionality	Graph letter
$y \propto x$	
$y \propto x^2$	
$y \propto \sqrt{x}$	
$y \propto \frac{1}{x}$	

(Total for Question 1 is 2 marks)

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2 Here are some graphs.



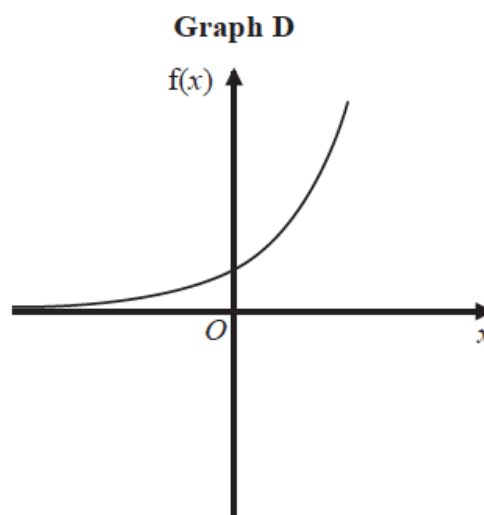
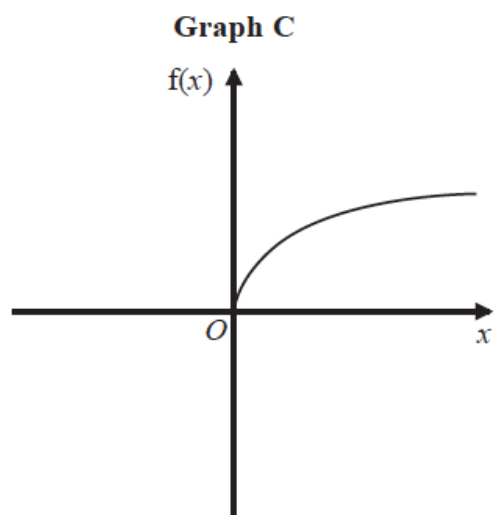
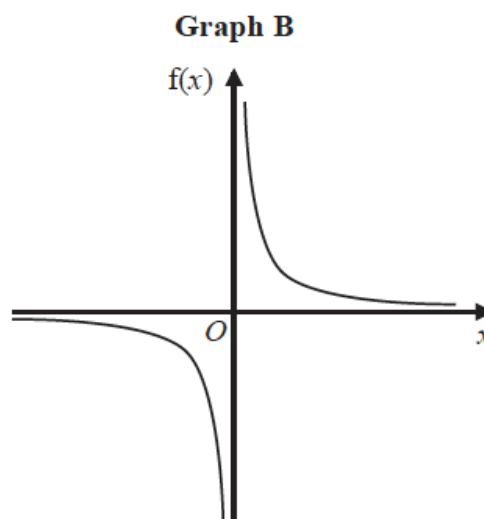
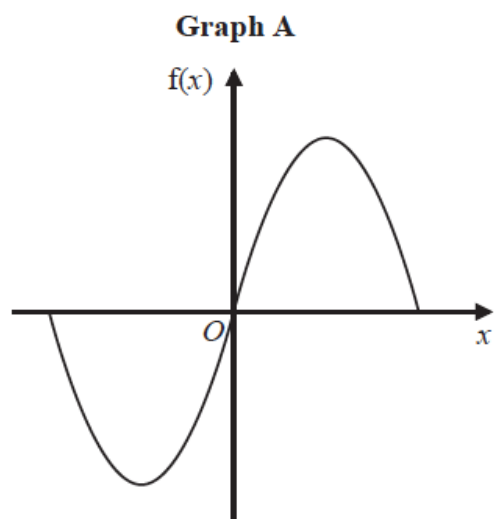
In the table below, match each equation with the letter of its graph.

Equation	Graph
$y = \sin x$	
$y = x^3 + 4x$	
$y = 2^x$	
$y = \frac{4}{x}$	

(Total for Question 2 is 3 marks)

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3 Here are four graphs.



The graphs represent four different types of function f .

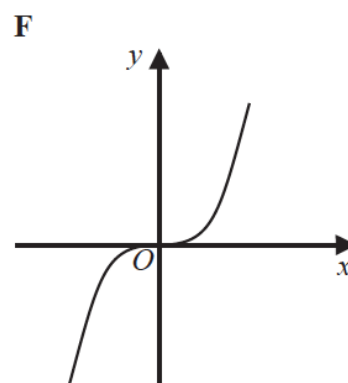
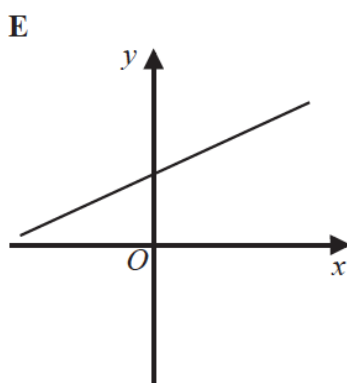
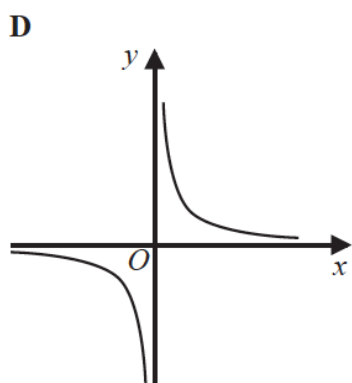
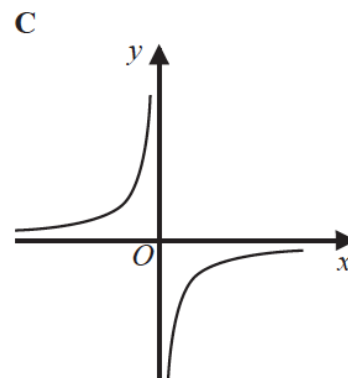
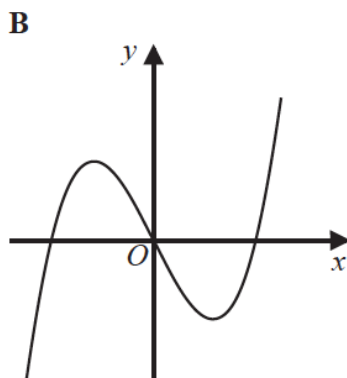
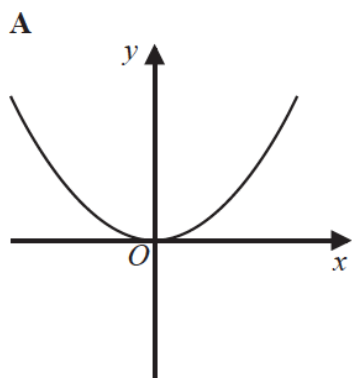
Match each description of the function in the table to the letter of its graph.

Description of function	Graph
$f(x)$ is inversely proportional to x	
$f(x)$ is a trigonometrical function	
$f(x)$ is an exponential function	
$f(x)$ is directly proportional to \sqrt{x}	

(Total for Question 3 is 2 marks)

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4 Here are six graphs.



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

(a) $y = x^3$

.....
(1)

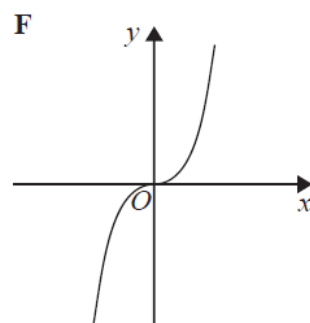
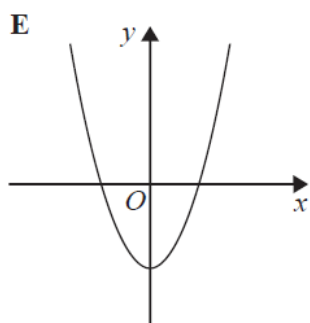
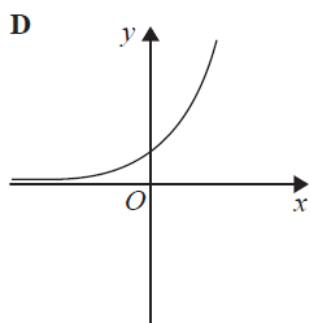
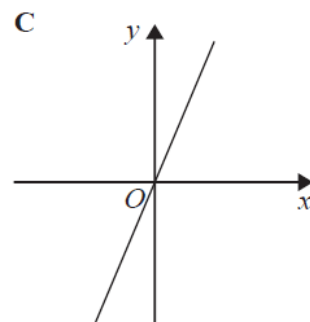
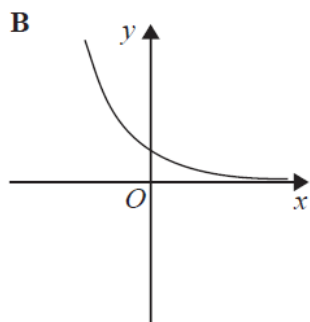
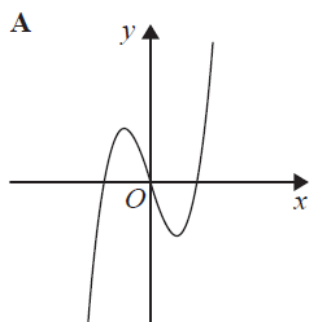
(b) $y = \frac{1}{x}$

.....
(1)

(Total for Question 4 is 2 marks)

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5 Here are six graphs.



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

(i) $y = 2^x$

.....

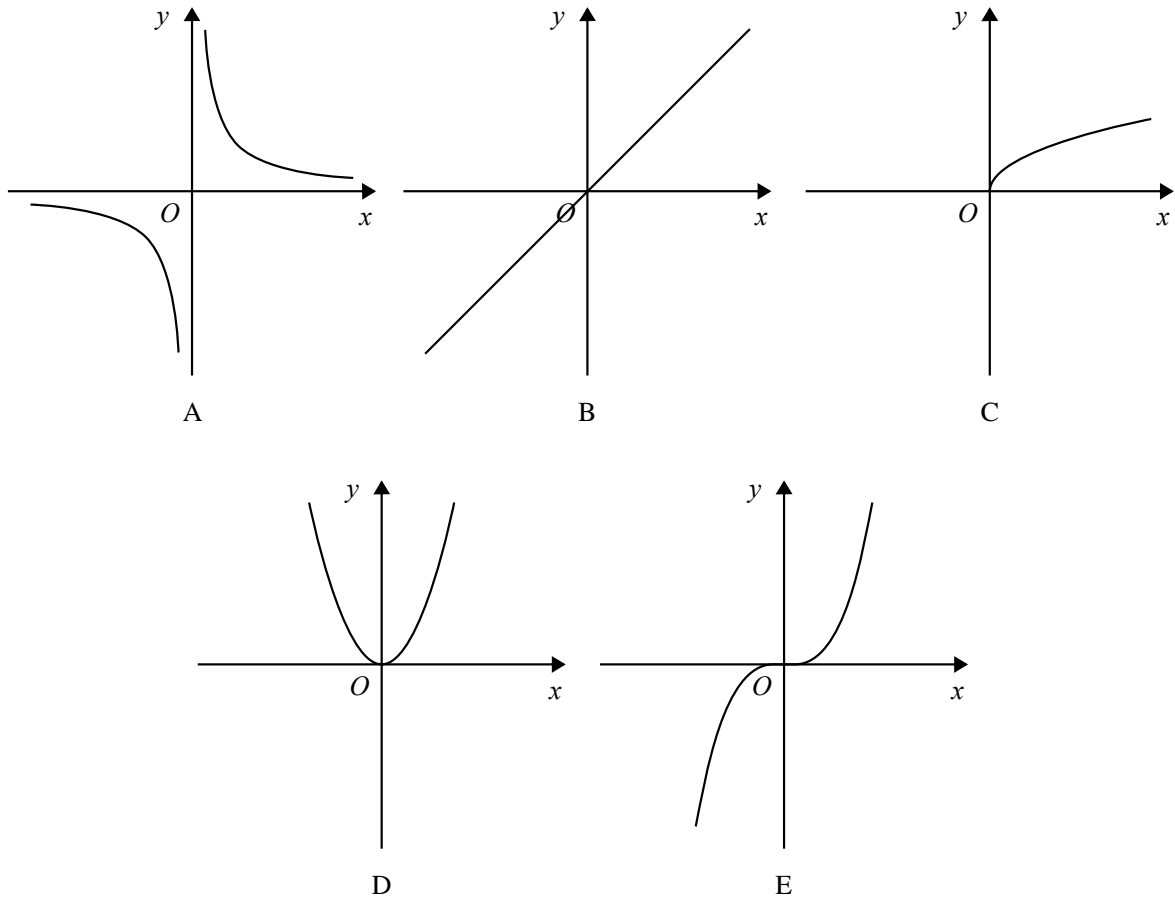
(ii) $y = x^3 - 3x$

.....

(Total for Question 5 is 2 marks)

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6 Here are five graphs.
Each graph shows either direct proportion or inverse proportion.



The table shows five equations.

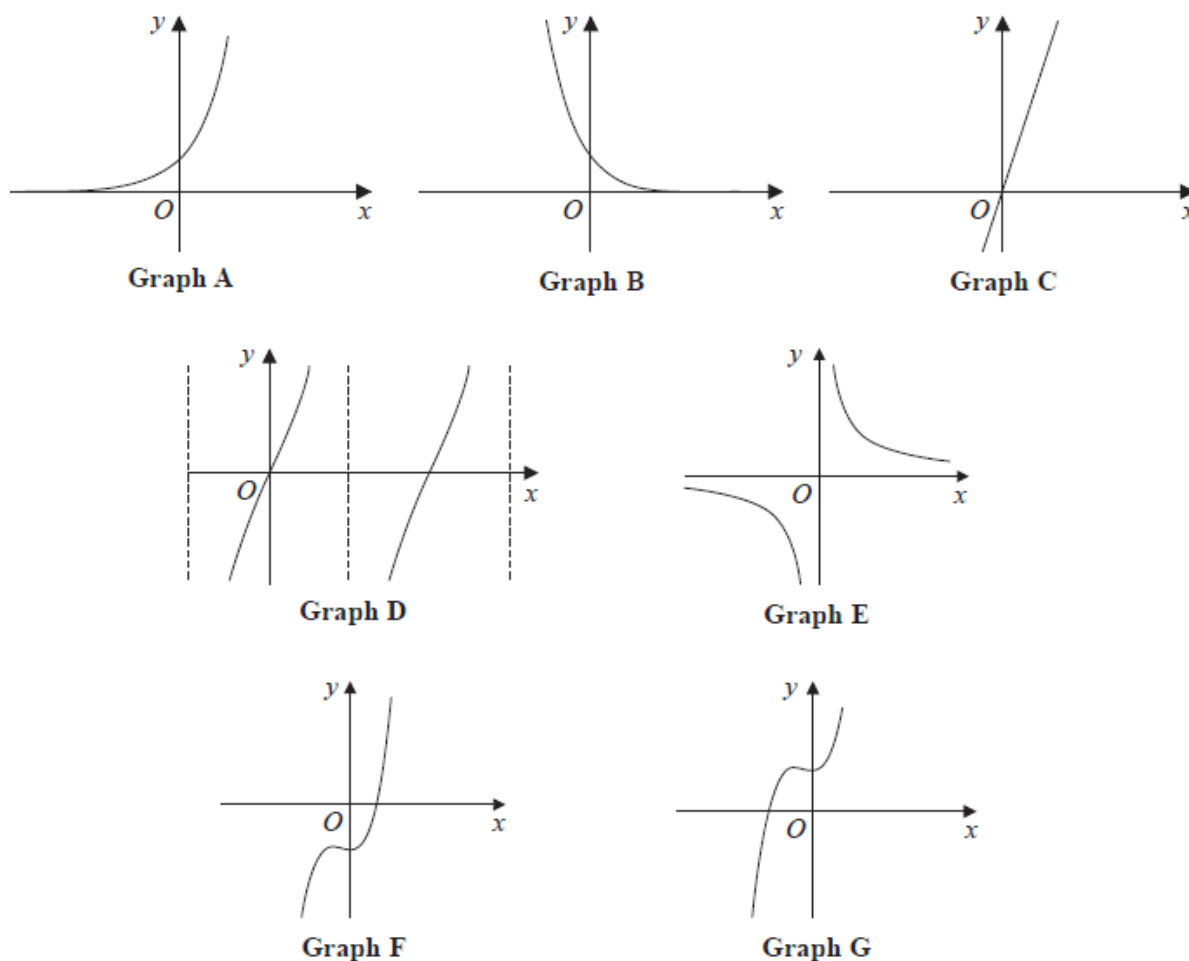
Equation	Graph
$y = kx^3$
$y = k\sqrt{x}$
$y = kx^2$
$y = \frac{k}{x}$
$y = kx$

Match the letter of each graph to its equation.

(Total for Question 6 is 3 marks)

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7 Here are seven graphs.



Complete the table below with the letter of the graph that could represent each given equation.

Equation	Graph
$y = 3^x$	
$y = \tan x^\circ$	
$y = x^3 + x^2 + 2$	
$y = \frac{3}{x}$	

(3)

(Total for Question 7 is 6 marks)

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- 8** At a depth of x metres, the temperature of the water in an ocean is T °C.
At depths below 900 metres, T is inversely proportional to x .

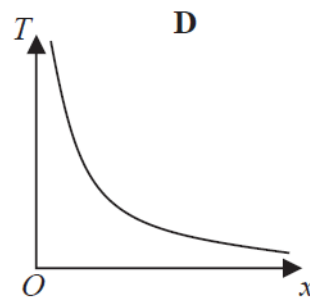
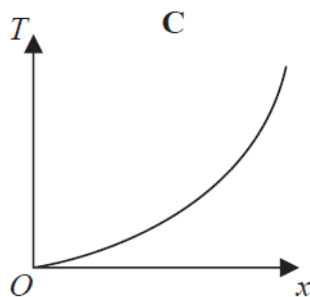
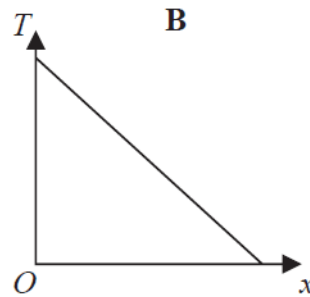
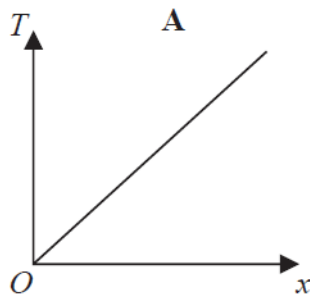
T is given by

$$T = \frac{4500}{x}$$

- (a) Work out the difference in the temperature of the water at a depth of 1200 metres and the temperature of the water at a depth of 2500 metres.

..... °C
(3)

Here are four graphs.



One of the graphs could show that T is inversely proportional to x .

- (b) Write down the letter of this graph.

.....
(1)

(Total for Question 8 is 4 marks)

TOTAL MARKS FOR PAPER: 21