



SEKOLAH BUKIT SION – HIGH SCHOOL

CHAPTER TEST: GRAPHS OF FUNCTIONS

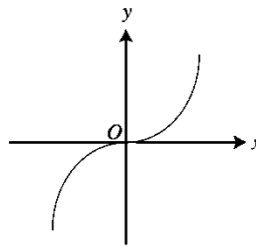
NAME		DATE	
CLASS		TEACHER	MR EMAN

ANSWER ALL QUESTIONS. PROVIDE NECESSARY WORKING.

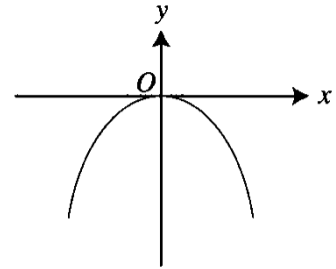
1. Match the functions below with their graphs on the right.
Write down the **CAPITAL LETTER** on the space indicated.

[6]

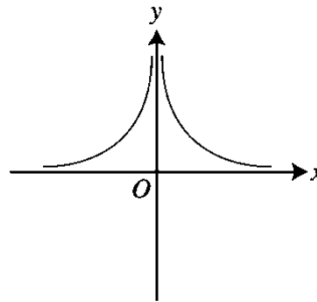
A	$y = 3x^2$
B	$y = 3^x$
C	$y = -3x^3$
D	$y = \frac{3}{x}$
E	$y = \frac{-3}{x^2}$
F	$y = 3x$
G	$y = -3x^2$
H	$y = -3^x$
I	$y = 3x^3$
J	$y = \frac{-3}{x}$
K	$y = \frac{3}{x^2}$
L	$y = -3x$



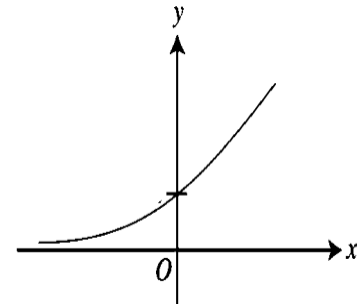
FUNCTION _____



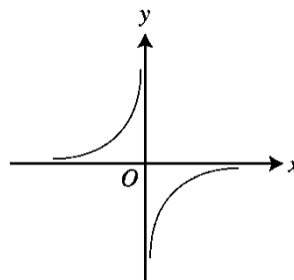
FUNCTION _____



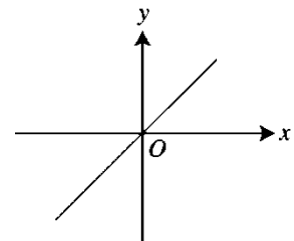
FUNCTION _____



FUNCTION _____



FUNCTION _____



FUNCTION _____

NAME		CLASS	
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2. (a) Anton deposits \$5000 in a bank account which pays 4% per annum compound interest. Calculate the **compound interest** in 5 years, correct to the nearest dollar.

Answer : [3]

(b) Charles deposits an amount in a bank account which pays 3.75% per annum compounded quarterly. If his money amounted to \$9185.75 in 2 years, calculate **the amount he deposited**, correct to the nearest dollar.

Answer : [3]

(c) Dan deposits \$15 000 in a bank account which pays $r\%$ per annum compounded monthly. The total interest earned after 3 years is \$2112.50, calculate the **annual interest rate** of the bank, correct to 2 decimal places.

Answer : [3]

3. The population of a certain species of fish has a relative growth rate of 1.2% per year. It is estimated that the population in the year 2000 was 12 million. In what year will the said species of fish double its population?

Answer : [3]

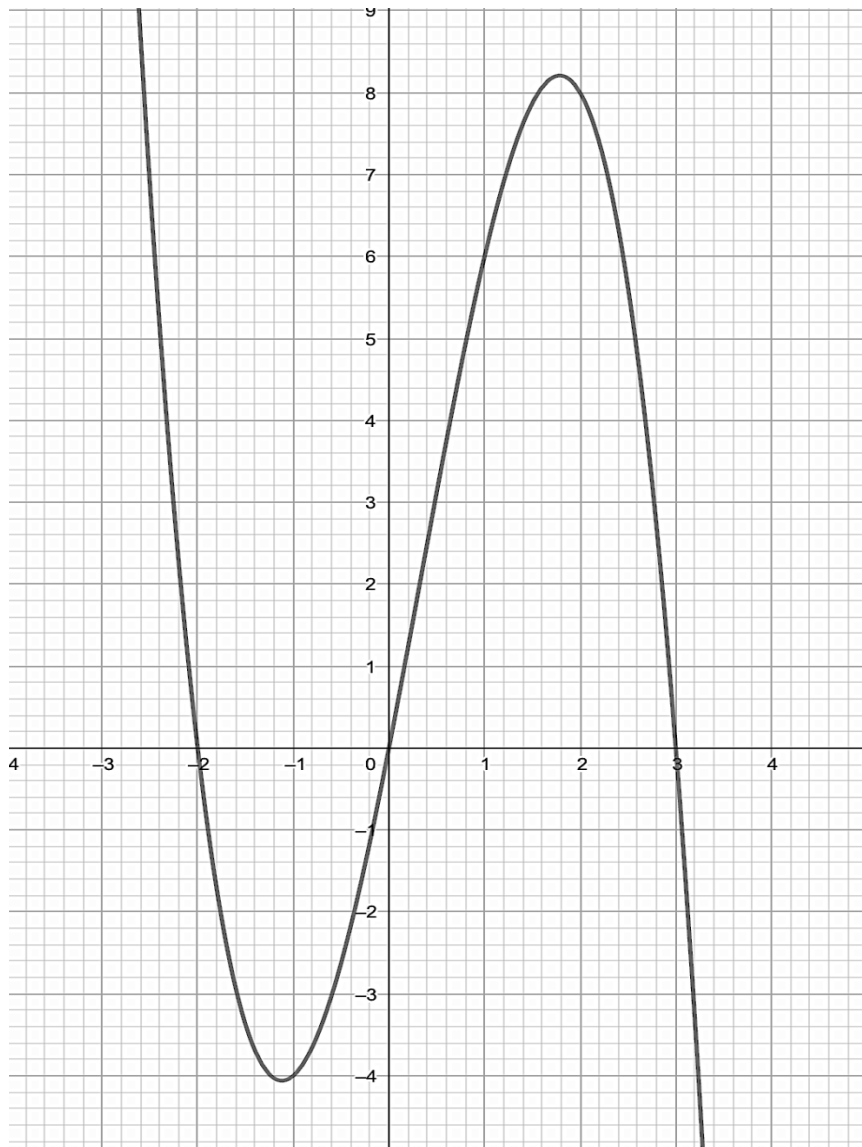
4. According to a recent study on car prices, in the first three years, the value of a car depreciates by 12% annually at the beginning of each year. In the succeeding years, the car's value depreciates by 15% annually at the beginning of each year.

Jane bought a car for \$82 900 in January 2010.

Find the value of the car in January 2017, leave your answer correct to the nearest dollar.

Answer : [4]

5. The graph of the function $y = x(2 + x)(3 - x)$ is shown below.



(a) By drawing a tangent, find the gradient of the curve at the point where $x = 2$.
Show entire working, leaving your answer correct to 2 decimal places if necessary.

Answer : [3]

(b) By drawing a suitable straight line, use the graph of $y = x(2 + x)(3 - x)$ to solve the equation

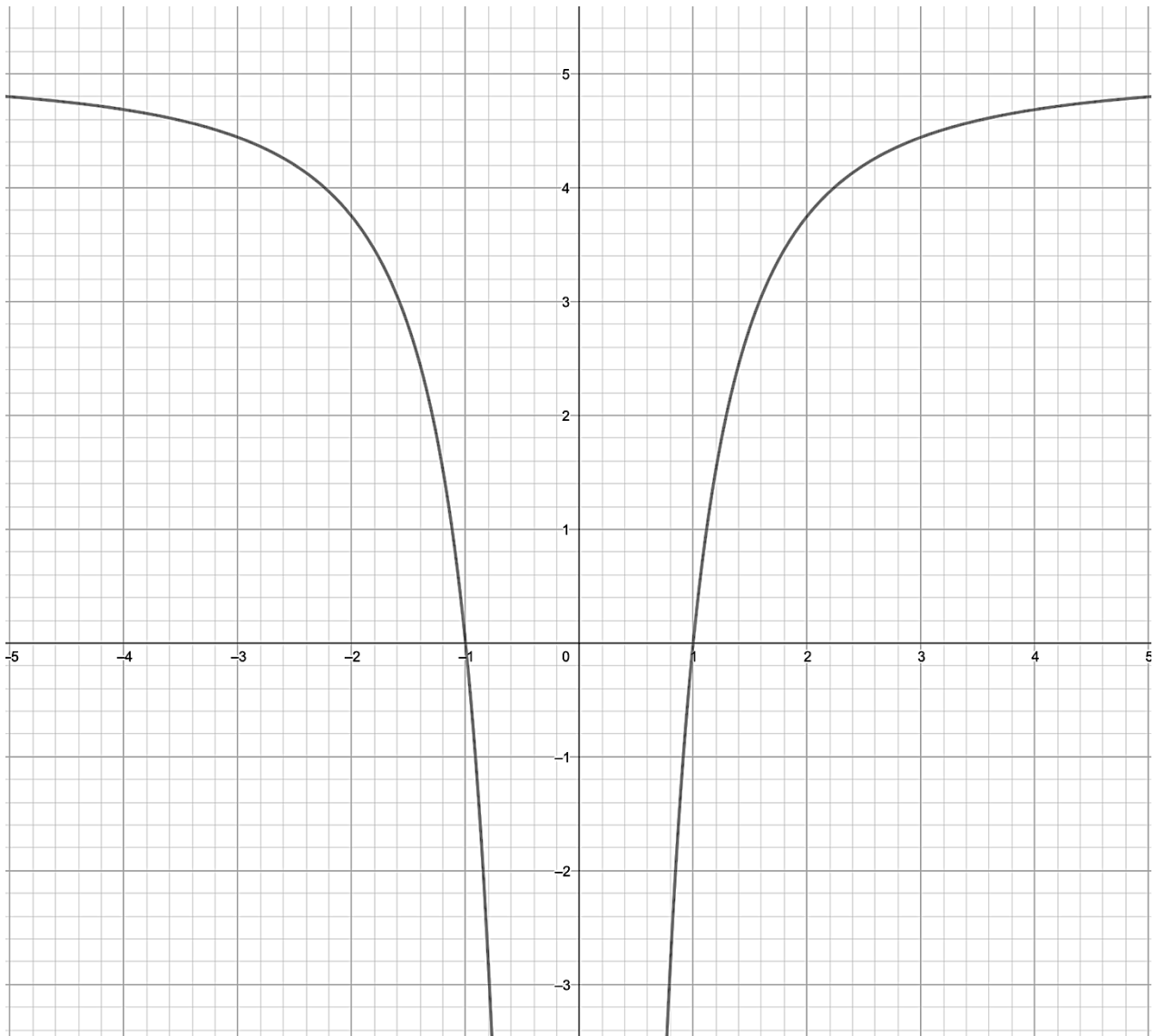
$$x(2 + x)(3 - x) = x + 1$$

Answer : [3]

(c) The equation $x(2 + x)(3 - x) = k$ has 3 solutions.
Write down the range of values of k .

Answer : [2]

6. The graph of the function $y = \frac{-5}{x^2} + 5$ is shown below.



(a) Find the value/s of

(i) y when $x = -2.5$

Answer : [1]

(ii) x when $y = 1$

Answer : [1]

(b) From the graph of the function above, describe the change in the graph of $y = \frac{-5}{(x+2)^2} + 5$

Answer : [1]

(c) The line $y = mx + 2$ is tangent to the curve at $x = 2.2$.

Draw this line and find the value of m , correct to 2 decimal places if necessary.

Answer : [3]

FOR NUMBER 7, CHOOSE AND ANSWER ONLY ONE OF THE TWO PROBLEMS.

EITHER

The table below gives values of x and y for $y = 16(0.5)^x$.

x	0	1	2	3	4	5	6	7	8
y	q	8	4	r	1	0.5	0.25	0.125	s

(a) Calculate the value of q , r and s .

Answer : $q = \dots\dots\dots r = \dots\dots\dots s = \dots\dots\dots$ [2]

(b) Using a scale of 2 cm to represent 1 unit on x -axis and 2 cm to represent 2 units on y -axis, plot the graph of $y = 16(0.5)^x$ for $0 \leq x \leq 8$. [4]

(c) Use your graph to find the value of

(i) x when $y = 4.5$

Answer : [1]

(ii) y when $x = 1.4$

Answer : [1]

(d) **By drawing suitable straight lines**, use your graph to solve the equations:

(i) $16(0.5)^x = 12$

Answer : [1]

(ii) $8(0.5)^x = \frac{x+1}{2}$

Answer : [2]

(iii) $(0.5)^{x-1} = 1.2$

Answer : [3]

OR

Given the function $y = \frac{8}{x} - 2$, complete the table of values.

x	-10	-8	-6	-4	-2	-1	0	1	2	4	6	8	10
y	-2.8	-3	-3.3	-4	m	-10	n	6	2	0	-0.67	-1	p

(a) Write down the value of m , n and p .

Answer : $m = \dots\dots\dots n = \dots\dots\dots p = \dots\dots\dots$ [2]

(b) Using a scale of 2 cm to represent 2 units on both axes, plot the graph of the function $y = \frac{8}{x} - 2$ for $-10 \leq x \leq 10$. [4]

(c) Write down the equation of the two asymptotes.

Answer :
..... [2]

(d) By drawing suitable straight lines, use your graph to solve the equations:

(i) $\frac{8}{x} - 2 = 4$
Answer : [1]

(ii) $8 - 2x = x^2$
Answer : [2]

(i) $x^2 - 3x - 4 = 0$
Answer : [3]