D. MATH ACADEMY

NEWLY ADDED TOPICS

TEST YOUR PROFICIENCY NOW!

QUESTION IS STRUCTURED SIMILAR TO WHAT MIGHT BEING ASKED IN THE ACTUAL EXAM AFTER THE LATEST SYLLABUS CHANGE

SOLUTION GUIDE :
AVAILABLE AT INSTAGRAM
@D_MATHACADEMY

TRIGOMETRY+

Newly added subsection

1. Solve the equation $3 \sin x = -1$ for $0° \leqslant x \leqslant 360°$.

Give your answers correct to 1 decimal place.

.... and .... [4]

2. Solve the equation $3 \cos x = 2$ for $180° \leqslant x \leqslant 360°$.

Give your answers correct to 1 decimal place.

.... [3]

3. Solve the equation $\tan x = -\frac{1}{4}$ for $0° \leqslant x \leqslant 180°$.

Give your answers correct to 1 decimal place.

.... [3]

4. Solve the equation $4 \tan x = 3$ for $0° \leqslant x \leqslant 360°$.

Give your answers correct to 1 decimal place.

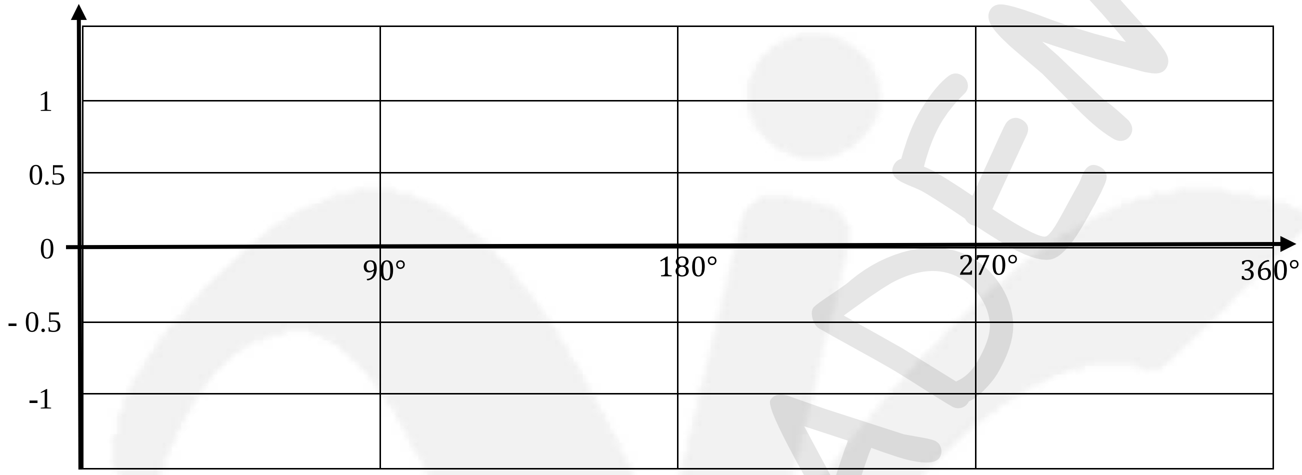
.... and .... [4]

5. Solve the equation $5 \cos x = -1$ for $0° \leqslant x \leqslant 360°$.

Give your answers correct to 1 decimal place.

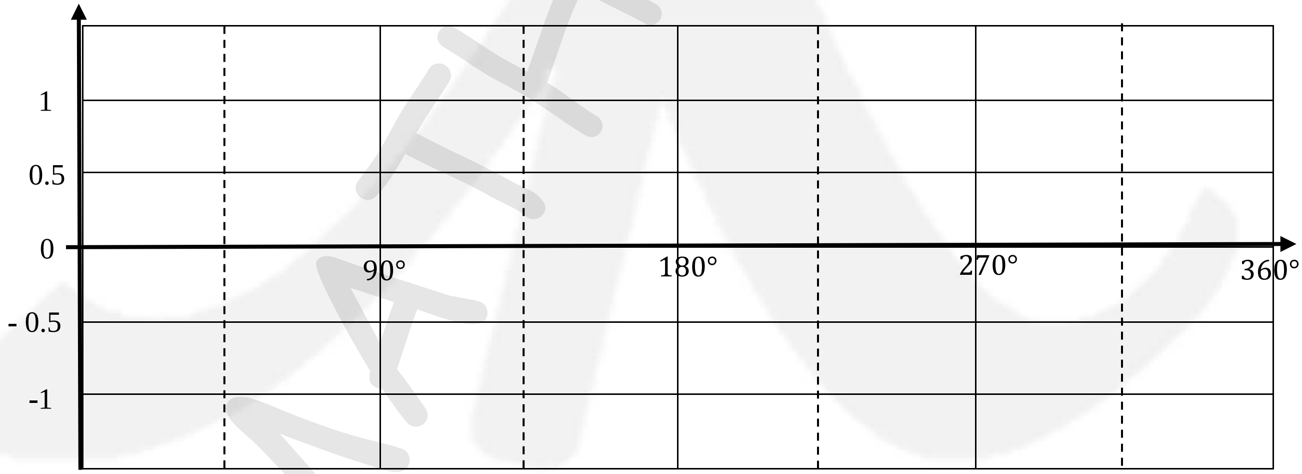
.... and .... [4]

6. On the grid below, sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 360°$.



[2]

7. On the grid below, sketch the graph of $y = \tan x$ for $0° \leqslant x \leqslant 360°$.

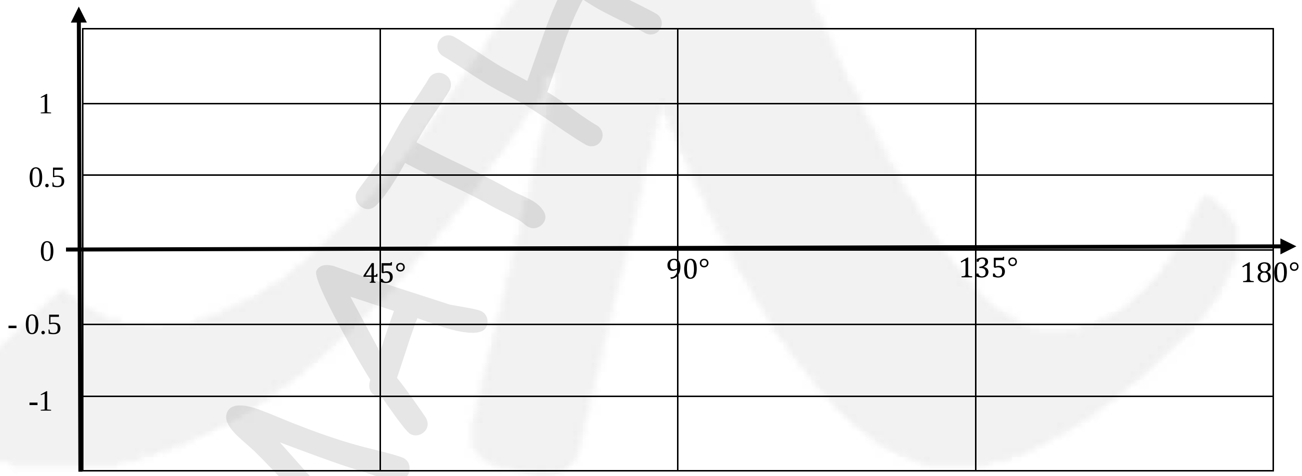


[4]

8. On the grid below, sketch the graph of $y = \sin x$ for $0° \leqslant x \leqslant 180°$.

[3]

9. On the grid below, sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 180°$.



[3]

10. On the grid below, sketch the graph of $y = \tan x$ for $0° \leqslant x \leqslant 180°$.

[3]

Completing the Square x Differentiation

Identify turning point (Local Maximum & Local Minimum)

1. A curve has equation $y = 2x^3 - 54x$.

   (a) Find the coordinates of the two turning points.

   (............ , ...) and (............ , ...) [6]

   (b) Determine whether each of the turning points is a maximum or a minimum. Give reasons for your answers.

   [3]

2. A curve has equation $y = x^3 - 3x^2 + 8$.

(a) Find the coordinates of the two turning points.

(............ , ...) and (............ , ...) [6]

(b) Determine whether each of the turning points is a maximum or a minimum.
Give reasons for your answers.

[3]

3. A curve has equation $y = 2x^3 + x^2 - 8$.

(a) Find the coordinates of the two turning points.

(............ , ...) and (............ , ...) [6]

(b) Determine whether each of the turning points is a maximum or a minimum.
Give reasons for your answers.

[3]

4. Find the turning point of $y = x^2 + 8x - 9$ by completing the square.

(..................... , ...) [4]

5. Use completing the square to find the value of *a* & *b*.

$$y = (x + a)^2 - b = x^2 + 3x - 6$$

a = ...

b = ... [4]

6. Find the turning point of $y = x^2 - x - 6$ by completing the square.

(..................... , ...) [4]

7. Use completing the square to find the value of a , b & c.

$$y = a(x+b)^2 - c = 2x^2 + 7x - 9$$

a = ...

b = ...

c = ... [4]

Box & Whiskers + Stem & Leaf Diagrams

Below is the Mathematics result list of class 5A

54	55	62	74	71	49
43	87	65	80	51	69
53	60	78	71	71	55

a) Complete the following stem-and-leaf diagram.

30	
40	
50	
60	
70	
80	
90	

Key: 1	2 represent 12 marks

[3]

b) Find the results of the following questions:

i) Mean

.... [2]

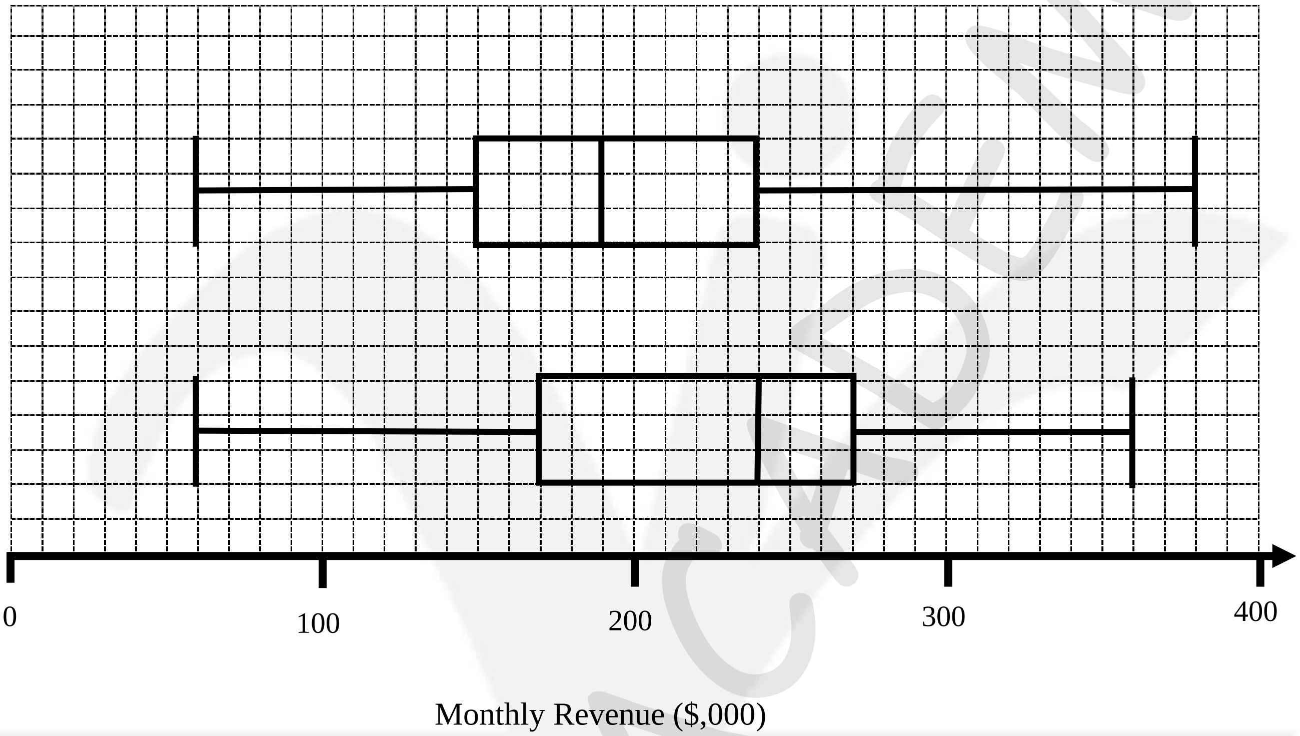
ii) Mode

.... [1]

iii) Range

.... [1]

These box-and-whisker plots show the monthly revenue for McDonald's and KFC.



a) Find the results for the following questions:

i) Monthly Revenue Median

McDonald's = ...
KFC = ...[2]

ii) Monthly Revenue IQR

McDonald's = ...
KFC = ...[2]

iii) Monthly Revenue Range

McDonald's = ...
KFC = ...[2]

b) Discuss the following statement:

i) After analyzing the report, the analyst argued that the monthly revenue of KFC is higher and has a bigger range than McDonald's

Is the analyst correct?
Justify the answer with reference to the box-and-whiskers plots.

[4]

ii) After analyzing the report again, the analyst figured out that McDonald's monthly revenue vary less than KFC.

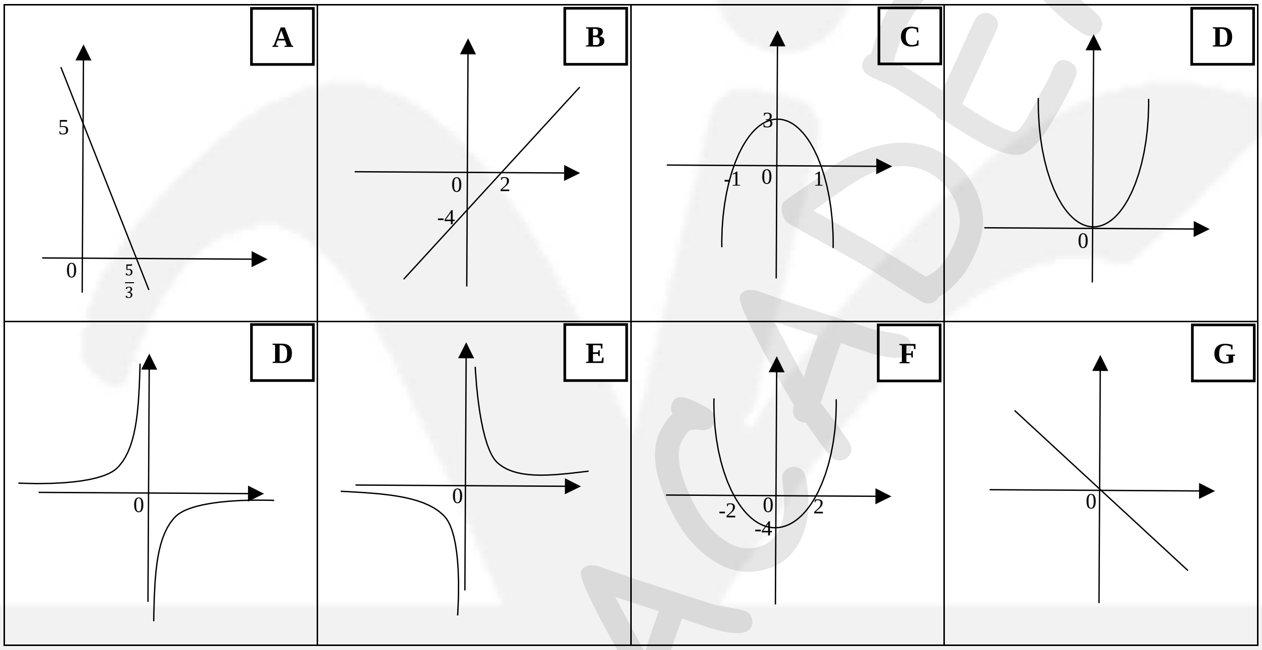
Is the analyst correct?

Justify the answer with the reference to the box-and-whiskers plots.

[2]

Function Graph Identification

The diagrams A, B, C, D, E, F, G and H are eight graphs of different functions.



Complete the table to identify the correct graph for each function.

Function	$y = -\frac{3}{x}$	$y = -3x^2 + 3$	$y = x^2$	$y = -x$
Diagram				

Function	$y = x^2 - 4$	$y = \frac{5}{x}$	$y = 2x - 4$	$y = -3x + 5$
Diagram				

[8]