



Mock-MATH12 T1

Mathematics G12 /90 Minutes

ADEC MATH Thanaweya

Trimester 1 Mock Exam

2016/2017

Requirement:

Ruler, pencil, protractor, blue pen,
scientific calculator.

Read these instructions first:

- Complete the box above with your information.
- Write in **blue** pen.
- The paper consists of 4 questions in 10 pages
- Read each question carefully; attempt every one.
- The **total** marks for each question is in .
- Show appropriate working to arrive at your solutions.
- Diagrams/shapes are not drawn to scale.

إختبار الرياضيات لثانوية ابوظبي

للفصل الدراسي الأول - امتحان تجريبي

2016/2017

المتطلبات

مسطرة، قلم الرصاص، منقلة، قلم حبر ازرق،
اله حاسبة.

اقرأ هذه التعليمات أولاً:

- سجل بياناتك قبل البدء بالإختبار.
- اكتب بالقلم الأزرق.
- تتضمن ورقة الأسئلة 4 اسئلة في 10 صفحات
- اقرأ وأجب عن الأسئلة كلها بدقة.
- تشير الدرجة التي بالمستطيل الى درجة السؤال.
- وضح خطوات الحل للوصول الى الإجابة.
- الرسومات والأشكال البيانية المعطاة تقريبية.

Question One

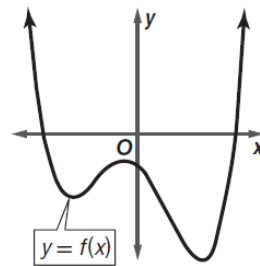
/20

/20

1) This section contains 10 multiple choice questions (A to J). Each question is worth 2 marks. Choose **one answer only**

A. Which of the following statements describes the end behavior of the function $f(x)$?

- a. $\lim_{x \rightarrow -\infty} f(x) = -\infty$, $\lim_{x \rightarrow \infty} f(x) = -\infty$
- b. $\lim_{x \rightarrow -\infty} f(x) = -\infty$, $\lim_{x \rightarrow \infty} f(x) = \infty$
- c. $\lim_{x \rightarrow \infty} f(x) = -\infty$, $\lim_{x \rightarrow -\infty} f(x) = \infty$
- d. $\lim_{x \rightarrow -\infty} f(x) = \infty$, $\lim_{x \rightarrow \infty} f(x) = \infty$



B. Which of the following functions **cannot** be considered as exponential function?

- a. $y = \left(\frac{1}{2}\right)^x$
- b. $y = (1)^x$
- c. $y = (2)^x$
- d. $y = (0.3)^x$

C. Which of the following is equal to $\log_7 x = y$?

- a. $x = 7^y$
- b. $y = 7^x$
- c. $x = 7 \log y$
- d. $y = \log x^7$

D. The transformations taken place on the function $f(x) = x^2$ to become $g(x) = x^2 - 1$ is?

- a. Moving vertically **down** by 1.
- b. Moving vertically **up** by 1.
- c. Moving horizontally **left** by 1.
- d. Moving horizontally **right** by 1.

E. The solution of the exponential function $27^{2m-2} = \frac{1}{9}$ is?

- a. $m = -3$
- b. $m = \frac{2}{3}$
- c. $m = \frac{1}{2}$
- d. $m = -2$

F. The equation to find the volume of sphere, $v(r) = \frac{4}{3}\pi r^3$, is consider to be?

- a. Radical function
- b. Constant function.
- c. Radical exponential function.
- d. Monomial function.

G. The zeros of the polynomial function $p(x) = x(4x - 3)(3x + 2)$ is?

- a. 0 , -2 , 3
- b. $\frac{-4}{3}$, 0 , $\frac{3}{2}$
- c. $\frac{-3}{4}$, 0 , $\frac{3}{2}$
- d. $\frac{3}{4}$, 0 , $\frac{-2}{3}$

H. If $f(x) = x^4 - 3x^3 + 5x - 3$ what is the value of $f(-2)$?

- a. -33
- b. -21
- c. 27
- d. 37

I. Which of the following is not a solution for the equation $x^3 - 37x - 84 = 0$?

- a. -4
- b. -3
- c. 6
- d. 7

J. The value of $(125)^{\frac{-1}{3}}$ is?

- a. -5
- b. $-\frac{1}{5}$
- c. $\frac{1}{5}$
- d. 5

Question Two

/32

/12

2) In the table below, identify if the functions are **continuous** or **discontinuous** at the given x value. Identify the *type* of discontinuity if it is of the infinite, jump or removable type.

Function	Continuous or Discontinuous at $x = 1$	Type of discontinuous
$f(x) = \frac{2}{x-1}$		
$g(x) = \begin{cases} 2x + 1; & x \geq 1 \\ x^2 & ; x < 1 \end{cases}$		
$h(x) = \sqrt{x+5}$		
$l(x) = \frac{x^2 - 1}{x - 1}$		

/12

3) **Without using calculator**, find the value of the following: (show your working)

A. If $\ln 2 = 0.69$ and $\ln 3 = 1.1$ find the value of $\ln 1.5$:

.....

B. Work out the value of $\log_2 17 + \log_2 5 - \log_2 170$:

.....
.....

C. Solve the equation $e^{2x} - 4e^x + 3 = 0$

.....
.....
.....

/8

4) The number of **fish** in a lake can be represented by the following function:

$$f(x) = -x^3 + 24x^2 - 16x + 384$$

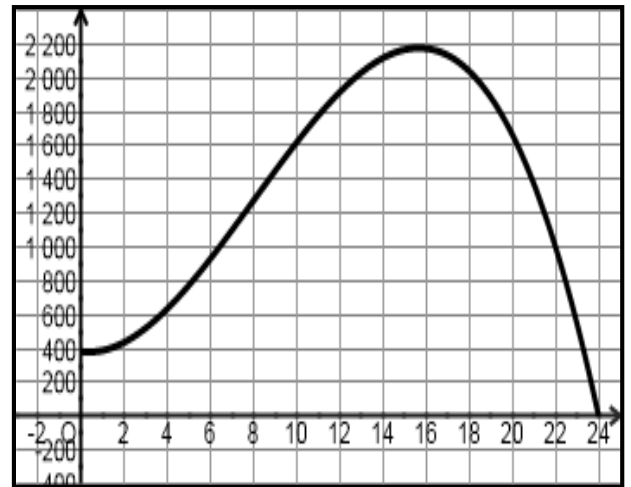
Where x represents the number of years *since* 2003.

A. What was the number of fish in the year 2003?

.....

B. In which year will the number of fish be the greatest? What would be the number?

.....
.....
.....
.....



C. Identify the year when the fish will extinct from the lake?

.....

Question Three:

/29

/9

5) If $g(x) = \begin{cases} x^2 - 1 & : x \geq 2 \\ [x] & : x < 2 \end{cases}$, $f(x) = 1 - \sqrt[3]{x}$

A. Explain the reason for the **discontinuity** of the function $g(x)$ at $x = 2$?

What type of discontinuity is this?

x	<i>1.9</i>	<i>1.99</i>	<i>1.999</i>	<i>2</i>	<i>2.001</i>	<i>2.01</i>	<i>2.1</i>
$g(x)$							

B. Find $[f \circ g](3)$

.....

C. Find $f^{-1}(x)$

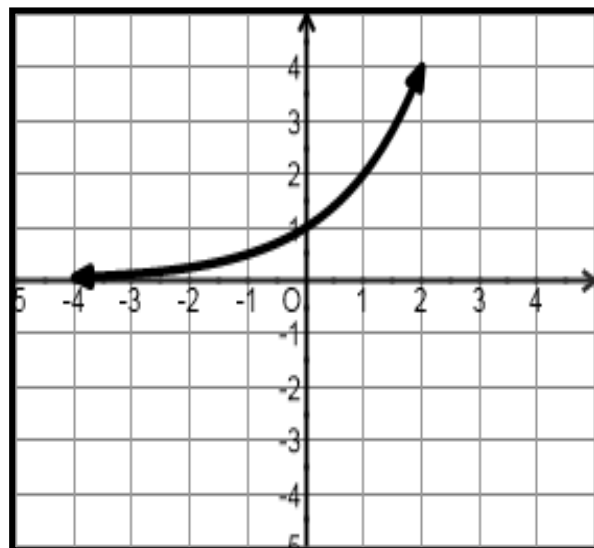
.....

/6

6) Use the graph of $f(x)$ given to draw the following two functions:

A. $g(x) = -2f(x) + 1$

B. $f^{-1}(x)$



7) The graph represents the function, $f(x)$. Fill in the gaps below to complete the sentences.

A. The least power for this function is:

B. For (x) , the relative **minimum** values when:

.....

C. $\lim_{x \rightarrow -\infty} f(x)$ is equal to

D. The range of the function, $f(x)$ is:

.....

E. The **decreasing** intervals for the function $f(x)$ are:

F. There is an **Absolute** value for the function $f(x)$ when $x = \dots$. And the type of it is

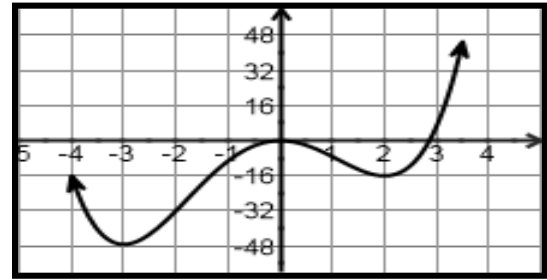
.....(maximum or minimum)

G. The function $f(x)$ is (even or odd or neither)

H. The rate of change for the function $f(x)$ for the interval $[-2, 2]$ is equal to:

.....

.....

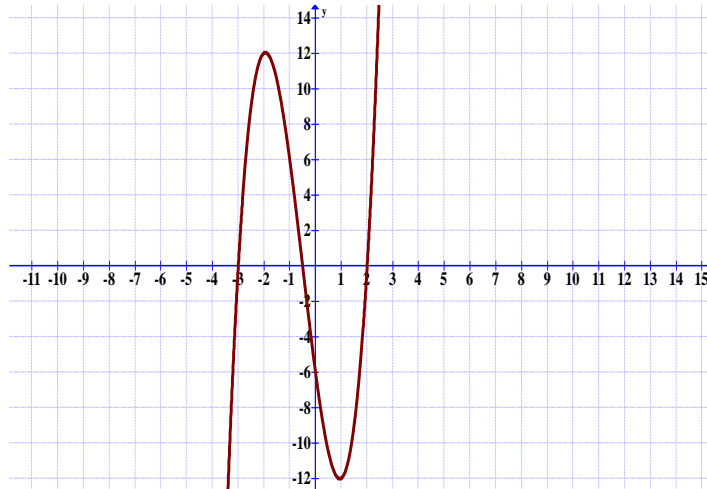


Question Four:

/19

/10

8) Using the following graph which represents the function $f(x) = 2x^3 + 3x^2 - 11x - 6$



Find the following:

- A. The **range**:
- B. The **End Behavior** of the function $f(x)$:
- C. The **rational zeros** for the function $f(x)$ are?
- D. Find all the **real factors** of the function $f(x)$?
- E. The **remainder** of the division of the function $f(x)$ by $(x - 1)$ is equal to?

/9

9) If $f(x) = \frac{(x-2)(x+1)}{(x-1)(x-2)}$ find:

- A. The **domain** of the function?
- B. The equation of the **horizontal** asymptote?
- C. The equation of the **vertical** asymptote?
- D. The **intersection** points with the function?

Mock-MATH12 T1

Questions (marks)	Max Marks	Name of Marker	Name of Re-Marker
Question1 (20)			
Question 2 (32)			
Question 3 (29)			
Question 4 (19)			
Total Mark (100)	100		
Final Mark (100)	100		

Adder Signature:

Reviewer Signature: