وزارة التربية والتعليم و التعليم الفنى
الإدارة المركزية للتعليم العام
إدارة تنمية مادة الرياضيات

برعاية معالي وزير التربية والتعليم و التعليم الفنى
السيد الأستاذ/ محمد عبد اللطيف

وتوجيهات رئيس الإدارة المركزية للتعليم العام

د/ هالة عبد السلام خفاجى

إشراف علمي

مستشار الرياضيات

أ/ منال عزقول

أداءات وتقييمات لمنهج الرياضيات البحتة لغات

للصف الثانى الثانوي "علمى"

الفصل الدراسى الأول

للعام الدراسي 2025 / 2026

الأسبوع الخامس

لجنة الإعداد

د/ محمد عبد العاطى أ/ محمد الفار أ/ عفاف جاد

ترجمة

أ/ عمرو فاروق

مراجعة الترجمة

أ/ شريف البرهامى

Algebra: Graphical representation of functions

1) If f and g are two polynomial functions, and if $f(x) = g(x)$, given that:
$f(x) = (2a - 8)x^3 + 5x^2 - x + c$, $g(x) = (a + b)x^2 + cx + k + 3$. Then find the value of k.

Solu: .....

.....

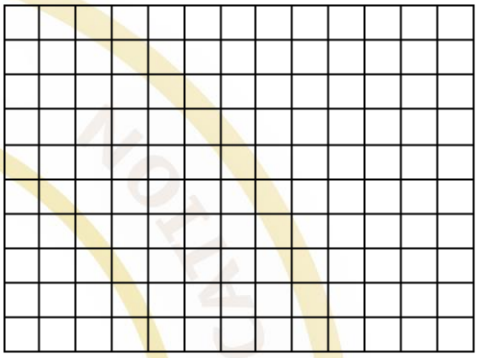
2) Graph the function f : $f(x) = \begin{cases} |x| & \text{when} \quad x < 0 \\ x^3 & \text{when} \quad x \geq 0 \end{cases}$

Then from the graph deduce its range and mention its type (even, odd or otherwise).

Solu: .....

.....

.....



Algebra: geometrical transformations

3) The opposite figure represents the graph of the function $f(x)$.

Write the rule of the function.

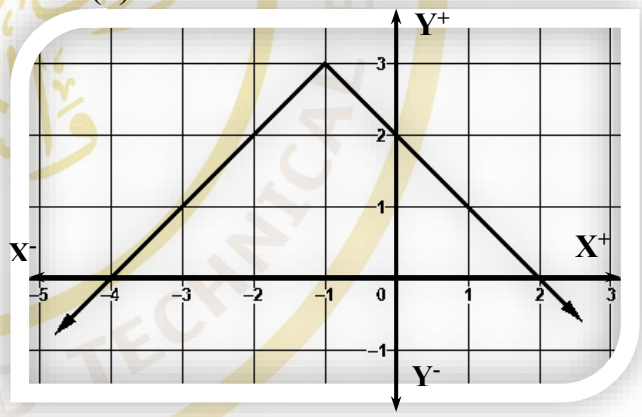
Then from the graph deduce its domain, its range and discuss its monotony

Solu: .....

.....

.....

.....

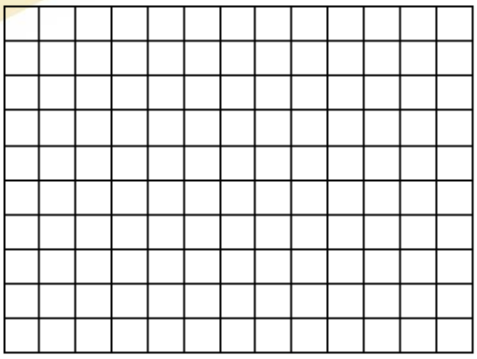


4) Graph the function f : $f(x) = 1 - (2 - x)^2$, from the graph deduce its domain, its range, discuss its monotony and mention its type (even, odd or otherwise).

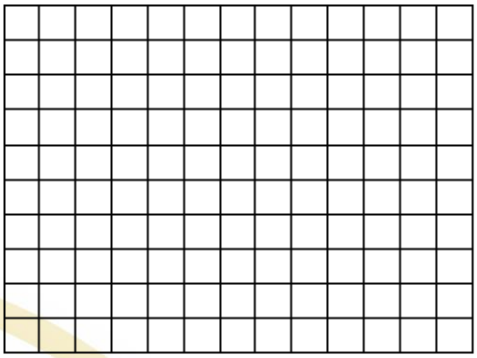
Solu: .....

.....

.....

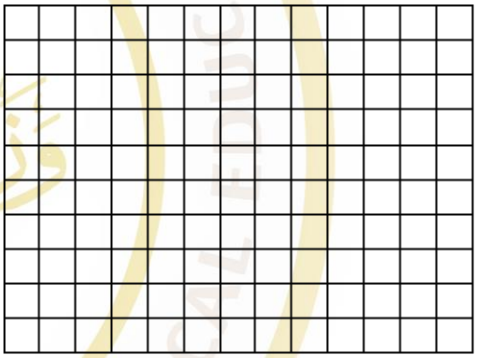


5) Graph the function f : $f(x) = \frac{1}{2-x} - 1$, from the graph deduce its domain, its range, discuss its monotony and mention its type (even, odd or otherwise).



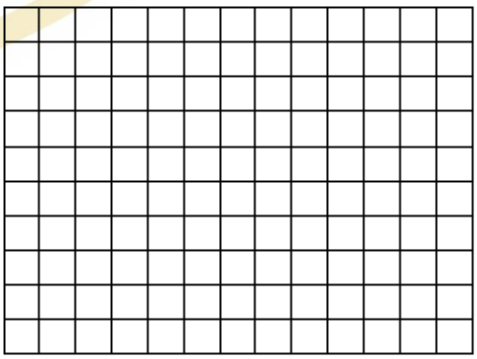
Solu: .....
.....
.....
.....
.....
.....
.....

6) By using the curve of the function $f(x) = x^3$
Graph the function g : $g(x) = (3 - x)^3 - 2$, then determine the point of symmetry of the function $g(x)$



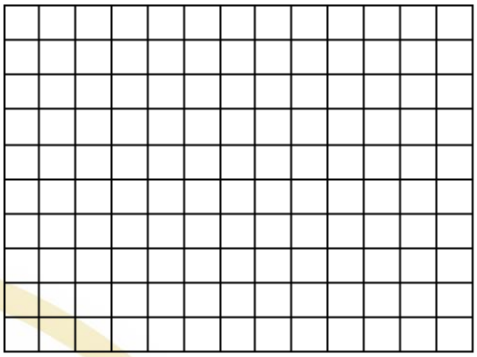
Solu: .....
.....
.....
.....
.....
.....
.....

7) Graph the function f : $f(x) = (x - 2)^3 + 1$



Solu: .....
.....
.....
.....
.....
.....

8) Graph the function f : f(x) = $x \mid x \mid$, from the graph deduce its domain, its range, discuss its monotony and mention its type (even, odd or otherwise).



Solu: .....
.....
.....
.....
.....

Calculus: Finding limits of a function using conjugate

9) Find: $\lim\limits_{x\to 4} \dfrac{\sqrt{x-3}-1}{x-4}$

Solu: .....
.....
.....
.....
.....

10) Find: $\lim\limits_{x\to 5} \dfrac{x^2-5x}{\sqrt{x+4}-3}$

Solu: .....
.....
.....
.....
.....

11) Find: $\lim\limits_{x\to 2} \dfrac{2x^2-4x}{\sqrt{x+2}-2}$

Solu: .....
.....
.....
.....
.....

Trigonometry: Exercises on the Sine Rule

12) Solve the triangle ABC in which a = 7 cm, m(∠ B) = 30° , and the radius length of its circumcircle equals 5 cm.

Solu: .....

.....

.....

.....

.....

13) ABCD is a parallelogram in which m(∠ A) = 50° , m(∠ DBC) = 70° , BD = 10 cm.
Find the perimeter of the parallelogram to the nearest centimeter.

Solu: .....

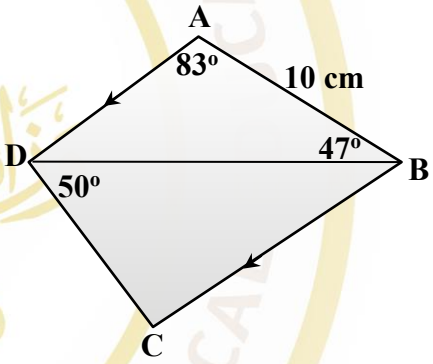
.....

.....

.....

.....

14) In the opposite figure:
ABCD is a quadrilateral in which BA = 10 cm,
$\overline{AD}$ // $\overline{BC}$, m(∠ BAD) = 83°, m(∠ ABD) = 47°,
m(∠ CDB) = 50° ,
Find the length of $\overline{CD}$ to the nearest centimeter



Solu: .....

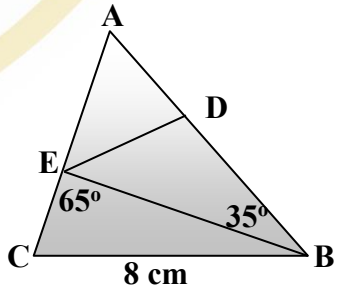
.....

.....

.....

.....

15) In the opposite figure:
Δ ADE ~ Δ ACB , BC = 8 cm , m(∠ DBE) = 35° ,
m(∠ BEC) = 65° .
Find the length of $\overline{DE}$ to the nearest centimeter.



Solu: .....

.....

.....

.....

رياضيات بحتة لغات 2 ث علمي ـ الاداء المنزلي ـ الاسبوع الخامس

Algebra: Graphical representation of functions

1) If f and g are two polynomial functions, and if $f(x) = g(x)$, given that:
$f(x) = (a - 5)\,x^3 + 7\,x^2 - c$, $g(x) = (c + a)\,x^2 + k - 1$. Then find the value of k.

Solu: .....

.....

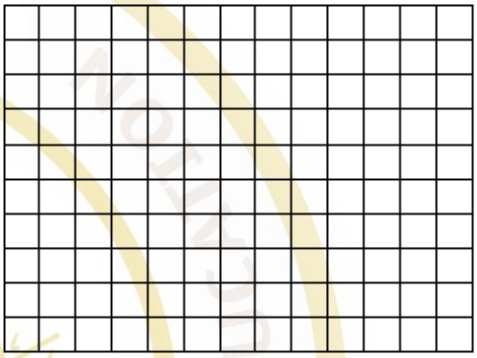
2) Graph the function f : $f(x) = \begin{cases} x^2 & \text{when} \quad x < 0 \\ x^3 & \text{when} \quad x > 0 \end{cases}$

Then from the graph deduce its range and mention its type (even, odd or otherwise).

Solu: .....

.....

.....



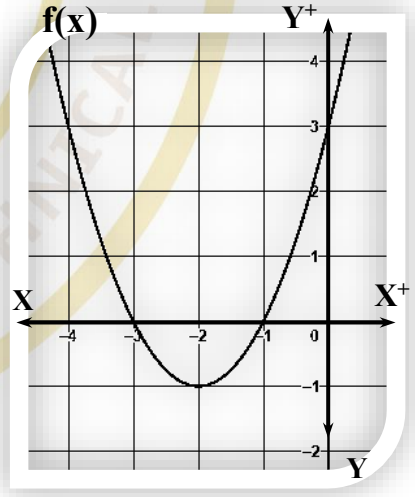
Algebra: geometrical transformations

3) In the opposite figure the curve $f(x)$ represents the curve of the function $g(x) = x^2$ then translated in the directions of the coordinate axes x, y as shown.

Find: 1) The rule of the function $f(x)$

2) Deduce its domain and its range.

3) Discuss its monotony



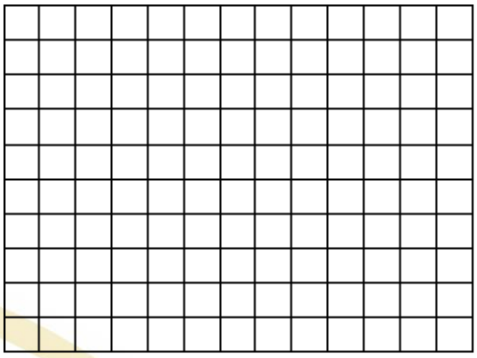
Solu: .....

.....

.....

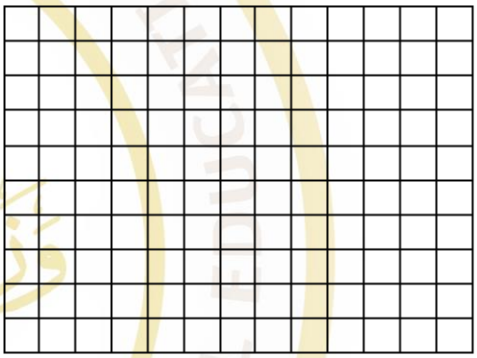
.....

4) Graph the function f : $f(x) = 3 - (x - 1)^2$, from the graph deduce its domain, its range, discuss its monotony and mention its type (even, odd or otherwise).



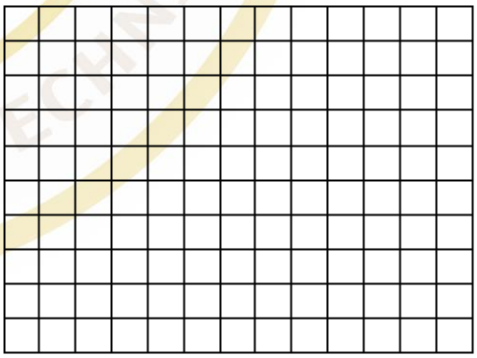
Solu: .....
.....
.....
.....

5) Graph the function f : $f(x) = \frac{1}{x+2}$, from the graph deduce its domain, its range, discuss its monotony and mention its type (even, odd or otherwise).



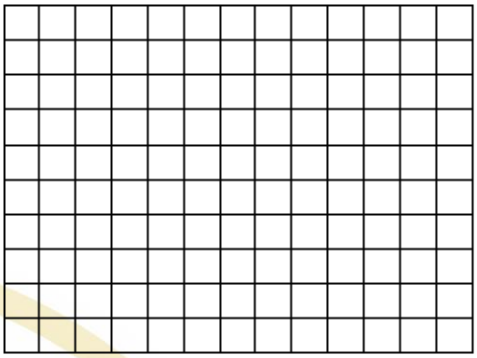
Solu: .....
.....
.....
.....
.....
.....
.....

6) By using the curve of the function $f(x) = x^3$
Graph the function g : $g(x) = (2 - x)^3 - 1$, then determine the point of symmetry of the function $g(x)$



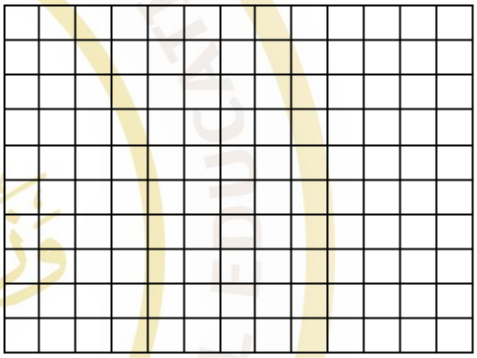
Solu: .....
.....
.....
.....
.....
.....
.....

7) Graph the function f : f(x) = $(x-2)^3 + 1$ from the graph deduce its domain, its range and discuss its monotony.



Solu: .....
.....
.....
.....
.....
.....

8) Graph the function f : f(x) = $\frac{|x|}{x}$, from the graph deduce its domain, its range, discuss its monotony and mention its type (even, odd or otherwise).



Solu: .....
.....
.....
.....
.....

Calculus: Finding limits of a function using conjugate

9) Find: $\lim_{x\to 5} \frac{\sqrt{x^2-9}-4}{x-5}$

Solu: .....
.....
.....
.....
.....

10) Find: $\lim_{x\to 6} \frac{x^2-6x}{\sqrt{x+3}-3}$

Solu: .....

.....

.....

.....

.....

.....

11) Find: $\lim_{x\to 3} \frac{2x^2-6x}{\sqrt{x+6}-3}$

Solu: .....

.....

.....

.....

.....

.....

Trigonometry: Exercises on the Sine Rule

12) ABCD is a parallelogram in which m(∠ A) = 40° , m(∠ DBC) = 65° , BD = 9 cm. Find the perimeter of the parallelogram to the nearest centimeter.

Solu: .....

.....

.....

.....

.....

.....

13) ABCD is a quadrilateral in which CD = 100 cm , m(∠ BCA) = 36° , m(∠ BDA) = 55° , m(∠ BCD) = 85° , m(∠ CDA) = 87° , BD = 10 cm. Find the area of the quadrilateral ABCD to the nearest centimeter square.

Solu: .....

.....

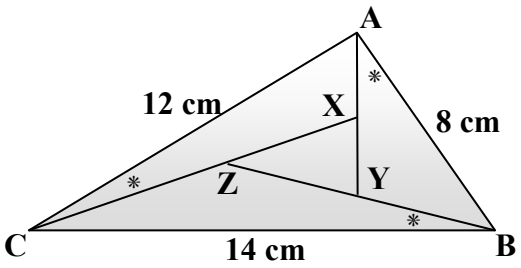
.....

.....

.....

.....

14) In the opposite figure:
ABC is a triangle in which AB = 8 cm , AC = 12 cm , BC = 14 cm , m(∠ BAY) = m(∠ ZBC) = m(∠ XCA)
Find ZY : XZ : XY



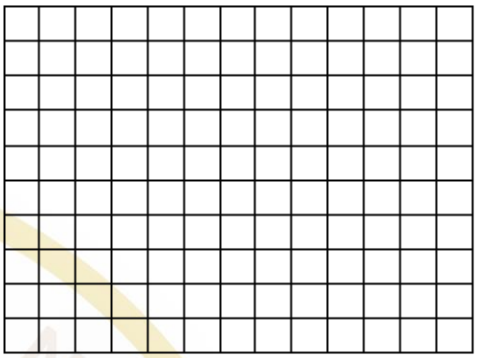
Solu: .....
.....
.....
.....
.....
.....

15) Solve the triangle ABC in which a = 8 cm , m(∠ B) = 32° , and the radius length of its circumcircle equals 6 cm.

Solu: .....
.....
.....
.....
.....

The first group

1) Graph the function f : f (x) = $\begin{cases} \frac{1}{x} & \text{when} \quad x < 0 \\ |x| & \text{when} \quad x \geq 0 \end{cases}$



Then from the graph deduce its range , its domain and mention its type (even, odd or otherwise).

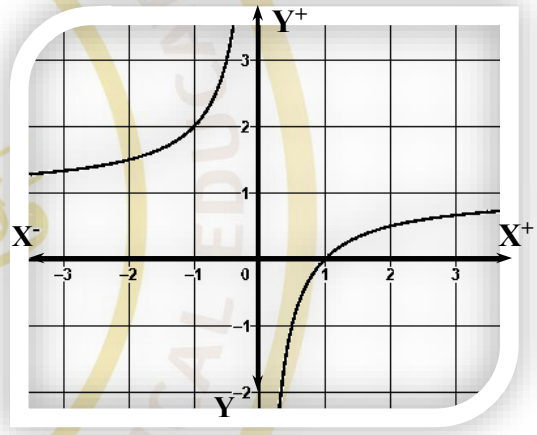
Solu: .....

.....

.....

2) The opposite figure represents the graph of the function

f(x) = $\frac{1}{x-b}$ + c Write the rule of the function.



Then deduce its domain, its range and Discuss its monotony

Solu: .....

.....

.....

.....

3) Find: $\lim_{x \to 5} \frac{x^2 - 25}{x - 5}$

Solu: .....

.....

.....

.....

.....

4) Find: $\lim_{x \to 2} \frac{x-2}{\sqrt{x+7}-3}$

Solu: .....

.....

.....

.....

.....

.....

5) ABC is a triangle in which m(∠ A) = 55° , m(∠ B) = 45° , the diameter length of its circumcircle equals 12 cm. Find its perimeter.

Solu: .....

.....

.....

.....

.....

.....

The second group

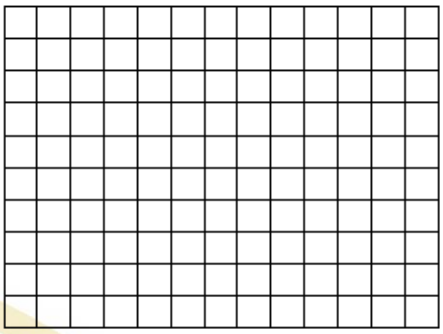
1) Graph the function f : f (x) = $\begin{cases} \frac{1}{x} & \text{when} \quad x < 0 \\ x^2 & \text{when} \quad x \geq 0 \end{cases}$

Then from the graph deduce its range , its domain and mention its type (even, odd or otherwise).

Solu: .....

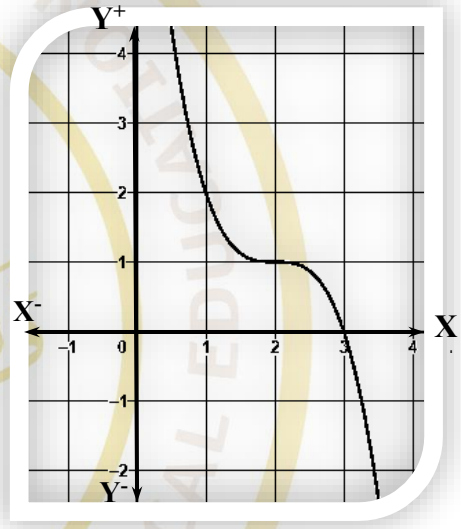
.....

.....



2) The opposite figure represents the graph of the function $f(x) = a\,(x - b)^3 + c$ Write the rule of the function.

Then deduce its domain, its range and Discuss its monotony



Solu: .....

.....

.....

.....

3) Find: $\lim_{x \to 1} \frac{x^2 - 1}{x - 1}$

Solu: .....

.....

.....

.....

.....

4) Find: $\lim_{x \to 2} \frac{x-2}{\sqrt{x-1}-1}$

Solu: .....

.....

.....

.....

.....

.....

5) ABC is a triangle in which ($\angle A$) = 65° , m($\angle B$) = 50° , the diameter length of its circumcircle equals 10 cm. Find its perimeter.

Solu: .....

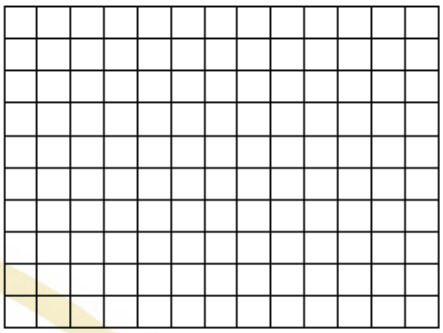
.....

.....

.....

The third group

1) Graph the function f : f $(x) = \begin{cases} x^3 & \text{when} \quad x < 0 \\ |x| & \text{when} \quad x \geq 0 \end{cases}$



Then from the graph deduce its range , its domain and mention its type (even, odd or otherwise).

Solu: .....

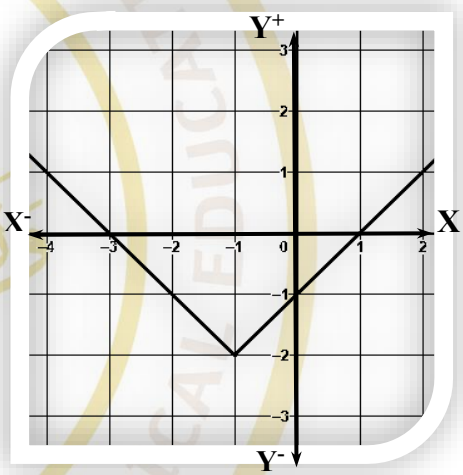
.....

.....

2) The opposite figure represents the graph of the function

f(x) = a | x − b | + c Write the rule of the function.

Then deduce its domain, its range and Discuss its monotony



Solu: .....

.....

.....

.....

.....

3) Find: $\lim_{x \to 4} \frac{x^2 - 16}{x - 4}$

Solu: .....

.....

.....

.....

.....

4) Find: $\lim_{x\to 3} \frac{x-3}{\sqrt{x-2}-1}$

Solu: .....

.....

.....

.....

.....

.....

.....

5) ABC is a triangle in which ($\angle A$) = 60º , m($\angle B$) = 45º , the diameter length of its circumcircle equals 14 cm. Find its perimeter.

Solu: .....

.....

.....

.....

.....

.....