LDDR- Niveau 2 : TE 7 – Fonctions

1MG01 PRECALCULUS. TEST 3-B 90'

EXERCISE 1 *5 pts)* NAME : .

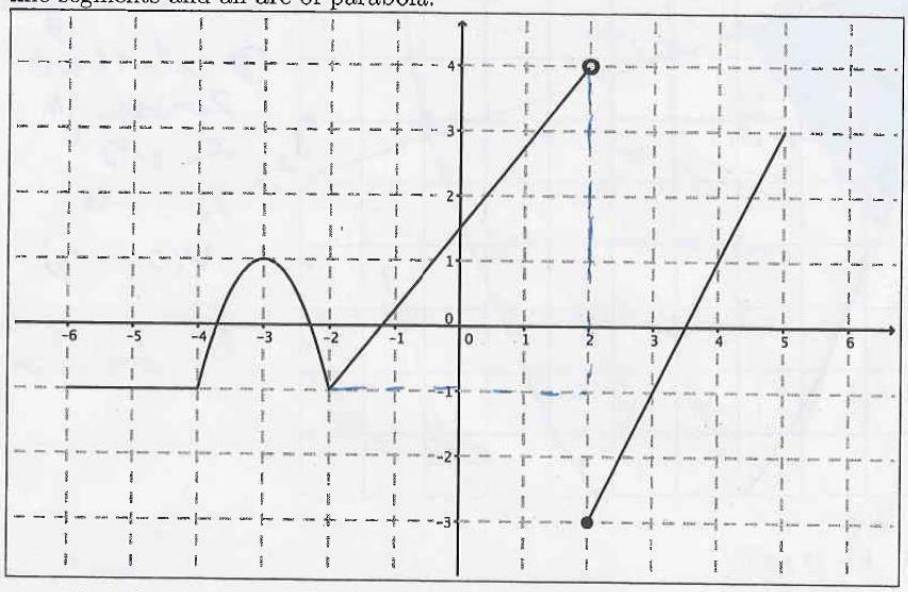
Determine the equation of the parabola that passes through $(-3;-64)$, $(2;-19)$ and $(1;-8)$.

EXERCISE 2 *(~ 4 pts)*

Solve $\frac{4-x}{-3(x-2)(x-7)} \leq 0$

EXERCISE 3 *(~ 15 pts)*

The graph of the function f, with domain $D = [-6;5]$, is represented below. It consists of three line segments and an arc of parabola.



a. One of the zeroes of f is $x = 3.5$. Determine the other zeros of f by computing their exact values.

b. Determine $f(2)$ and $f(4)$

c. Determine $f([-6;5])$

d. Determine $f(]0;4])$

e. Determine the interval A as small as possible such that $f(A) =]-1;1]$.

f. Determine $\{x \in \mathbb{R} | f(x) > -1\}$

g. Place on the graph the point(s) whose abscissa and ordinate are opposite.

EXERCISE 4 *(~ 8 pts)*

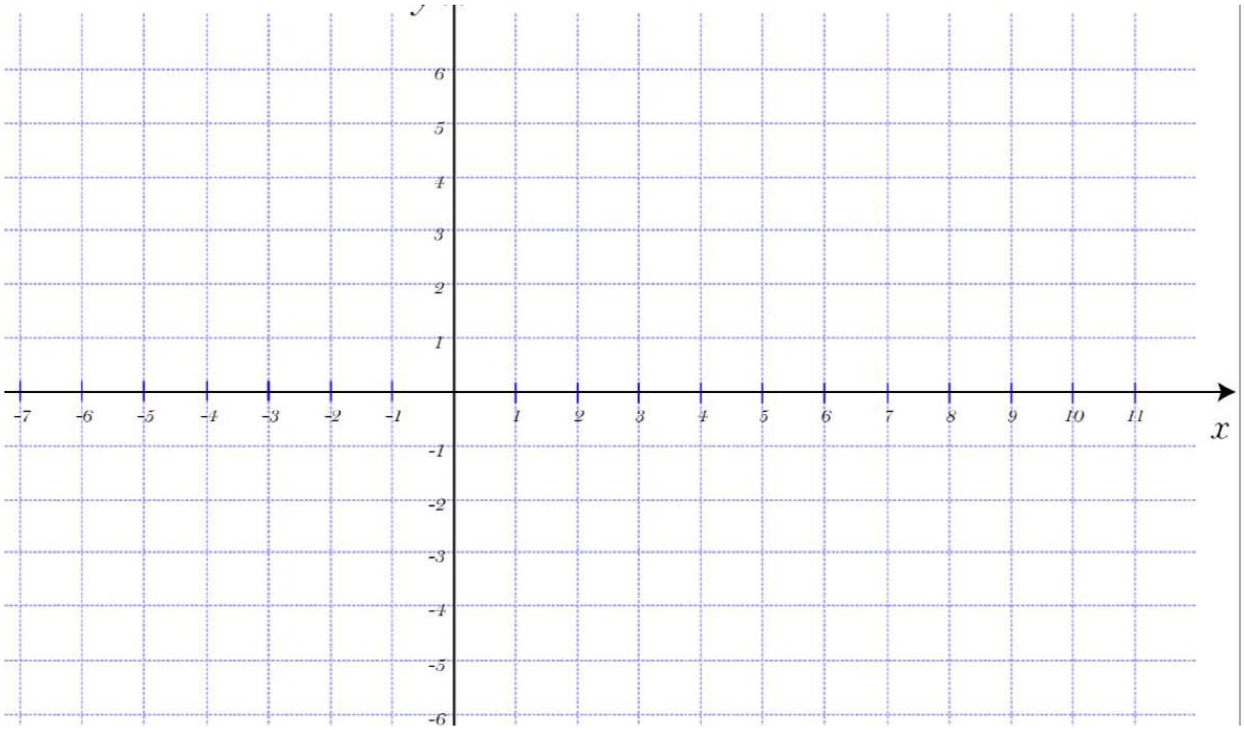
We consider the parabola $P : y = -2.5x^2 - 10x - 14$ and the line $a : y = -5x + 6$.

a. Give the equation of the line b that is perpendicular to a and that passes through the vertex of P

b. Determine the equation of the line c that is parallel to a and tangent to P

EXERCISE 5 (~ *6 pts*)

Represent the area containing the points $(x;y)$ that satisfy the system $\begin{cases} 3x-2y<-6 \\ y \leq \frac{-x+3}{3} \\ x^2-16<0 \end{cases}$



EXERCISE 6 (~ *12 pts*)

a. Determine the domain of $f(x)=\sqrt{-2x^3-3x^2+10x+15}$, given that $x=-1.5$ is a root of $-2x^3-3x^2+10x+15$

b. Give a function whose domain is $\mathbb{R}\backslash\{-1;6\}$. What's the range of your function ?

c. Give a function whose range is $R=]-\infty;5]$. What's the domain of your function ?

d. Give the domain of $f(x)=\frac{2}{-1+\sqrt{5-2x}}$