LDDR_Niveau_1_TE4_Fonctions

1MG03 PRECALCULUS TEST 3A 90'

EXERCISE 1 NAME :

Determine the equation, in the form of your choice, of

a. P_1 : the parabola that passes through the points $A(3; 3.5)$, $B(-2; 1)$ and $C(1; 11.5)$

b. P_2 : the parabola whose vertex is $(5; -1)$ and that contains the point $(2; -4)$

c. P_3 : a concave parabola that has no intersection with the x-axis.

EXERCISE 2 (~ 4 *pts*)

Determine the values of $m \in \mathbb{R}$ such that the line $y = mx$ and the parabola $y = 4x^2 + 1$ are secant (have two intersections)

EXERCISE 3 *8 pts*)

a. Determine the equation of the line through $(-2; 3)$ and $(3; -1)$.

b. Determine the equation of the line b : it is parallel to the line $y = 2x + 5$ and it passes through the vertex of the parabola $y = x^2 - 6x + 7$.

c. Determine the equation of the line c : it is perpendicular to the line $y = -\frac{2}{3}x + 4$ and it passes through the origin.

EXERCISE 4 $\sim$ *13 pts*)

a. Give a function whose domain is $D = \mathbb{R}\backslash\{-7\}$

b. Give the domain of $f(x) = \sqrt{x-1} + \sqrt{3-x}$

c. Determine the domain of $f(x) = \frac{5}{\sqrt{6-2x^2}}$

d. The polynomial $p(x) = 2x^3 + 3x^2 + k$ is such that $p(-2) = 0$. Find k and then determine the root(s) of p (for that k).

EXERCISE 5

Represent on a system of axes the solution to the following system of inequations

$$\begin{cases} -2x + 1 < -5x - 2 \\ 3x - 4y - 8 \geq 0 \end{cases}$$