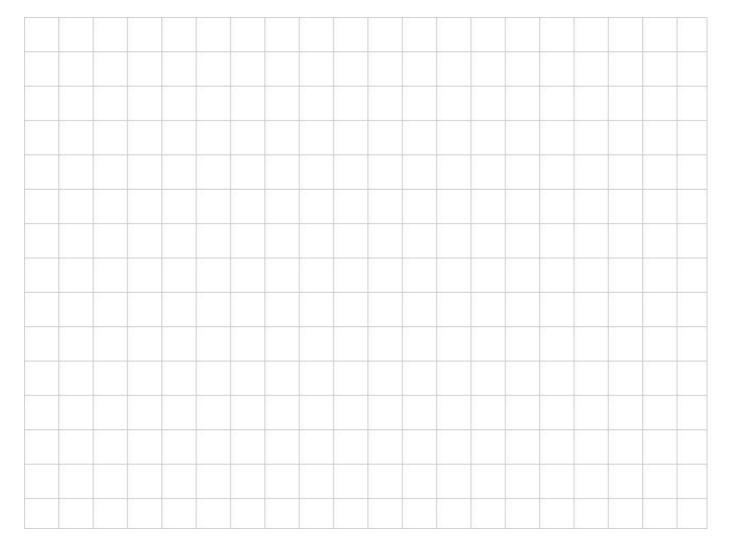
*I*-Let *f* be the function defined by  $f(x) = -\frac{1}{4}x^2 + \frac{1}{2}x + 2$ .

Let  $f_1$ ,  $f_2$ ,  $f_3$ ,  $f_4$  be the functions associated to f, defined by the following relationships :

 $f_1(x) = -f(x)$ ;  $f_2(x) = f(-x)$ ;  $f_3(x) = -f(-x)$ ,  $f_4(x) = f(x-2)+1$ Draw the five parabolas P,  $P_1$ ,  $P_2$ ,  $P_3$ ,  $P_4$  of the five functions on the same graph below.

(Chose carefully the position of the origin to be able to show the curves properly, and use 5 different colors)

Explain which geometrical transformation of (P) correspond to each of these 4 new parabolas.



 $\overline{II-Let\ h\ be\ the\ function\ defined\ by\ h(x)} = \frac{2-x}{2+x}.$ 

Let  $h_1$ ,  $h_2$ ,  $h_3$ ,  $h_4$  be the functions associated to h, defined by the following relationships :

 $h_1(x) = |h(x)|$ ;  $h_2(x) = h(|x|)$ ;  $h_3(x) = |h(-x)|$ ,  $h_4(x) = h(x-2)+1$ Draw the five Hyperbolas H,  $H_1$ ,  $H_2$ ,  $H_3$ ,  $H_4$  of the five functions on the same graph below.

(Chose carefully the position of the origin to be able to show the curves properly, and use 5 different colors)

Explain which geometrical transformation of (H) correspond to each of these 4 new Hyperbolas.

