

	<b>INSTITUCIÓN EDUCATIVA LA PRESENTACIÓN</b>					
	NOMBRE ALUMNA:					
	ÁREA / ASIGNATURA: Matemática					
	DOCENTE: ÉDISON MEJÍA MONSALVE					
	PERIODO	TIPO GUÍA	GRADO	Nº	FECHA	DURACIÓN
II	APRENDIZAJE	11º	7	23/05/2022		

### INDICADOR DE DESEMPEÑO:

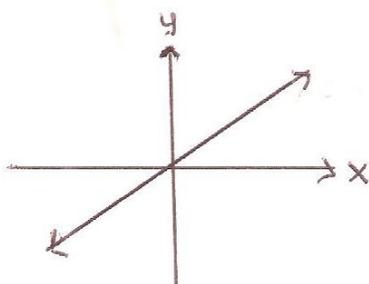
Realiza transformaciones y desplazamientos de funciones reales, para utilizar los modelos matemáticos de algunas funciones especiales

## **MODELOS GRÁFICOS Y DESPLAZAMIENTO DE FUNCIONES**

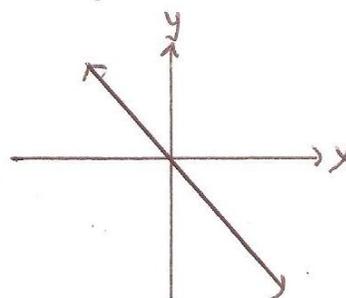
### A. MODELOS GRÁFICOS:

1.  $y = x$

(Lineal)

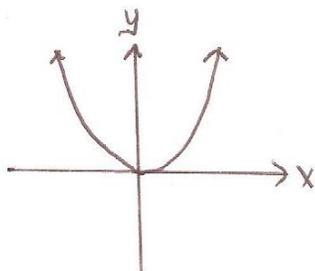


\*  $y = -x$

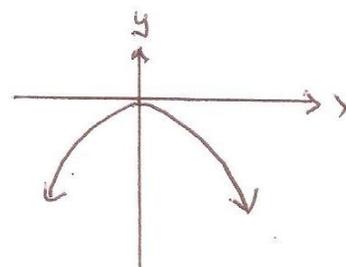


2.  $y = x^2$

(Cuadrático)

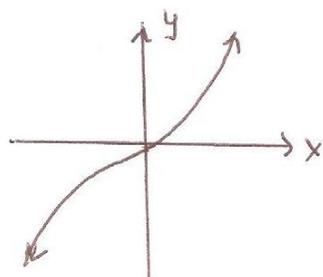


\*  $y = -x^2$

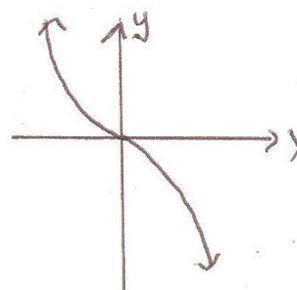


3.  $y = x^3$

(Cúbico)

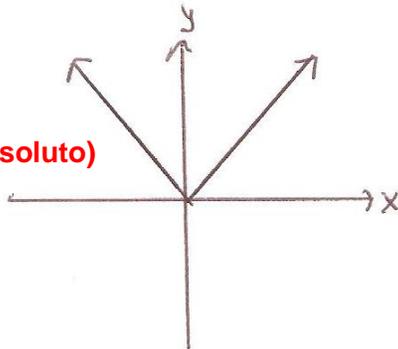


\*  $y = -x^3$

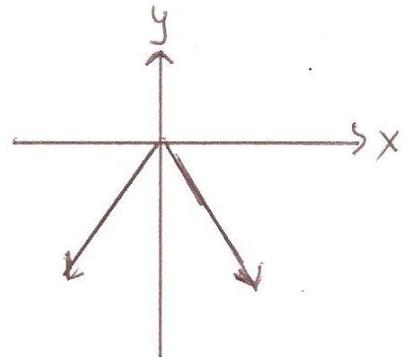


4.  $y = |x|$

**(Valor absoluto)**

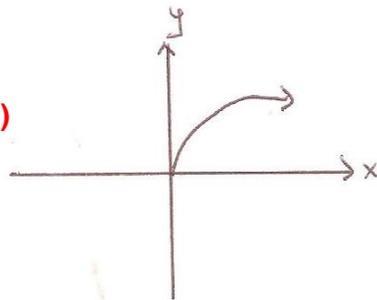


\*  $y = -|x|$

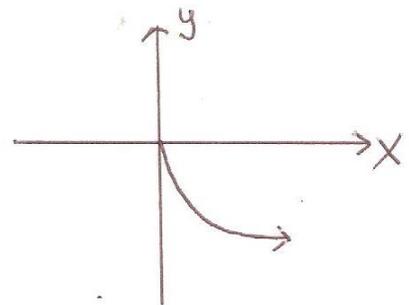


5.  $y = \sqrt{x}$

**(Irracional)**

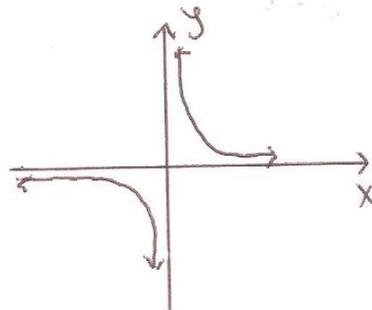


\*  $y = -\sqrt{x}$

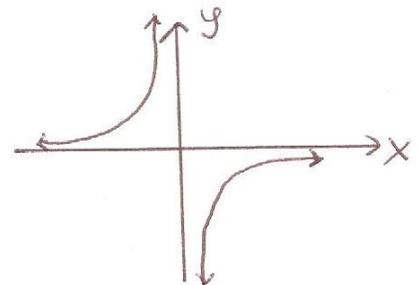


6.  $y = 1/x$

**(Racional)**



\*  $y = -1/x$



## B. DESPLAZAMIENTOS HORIZONTALES Y VERTICALES:

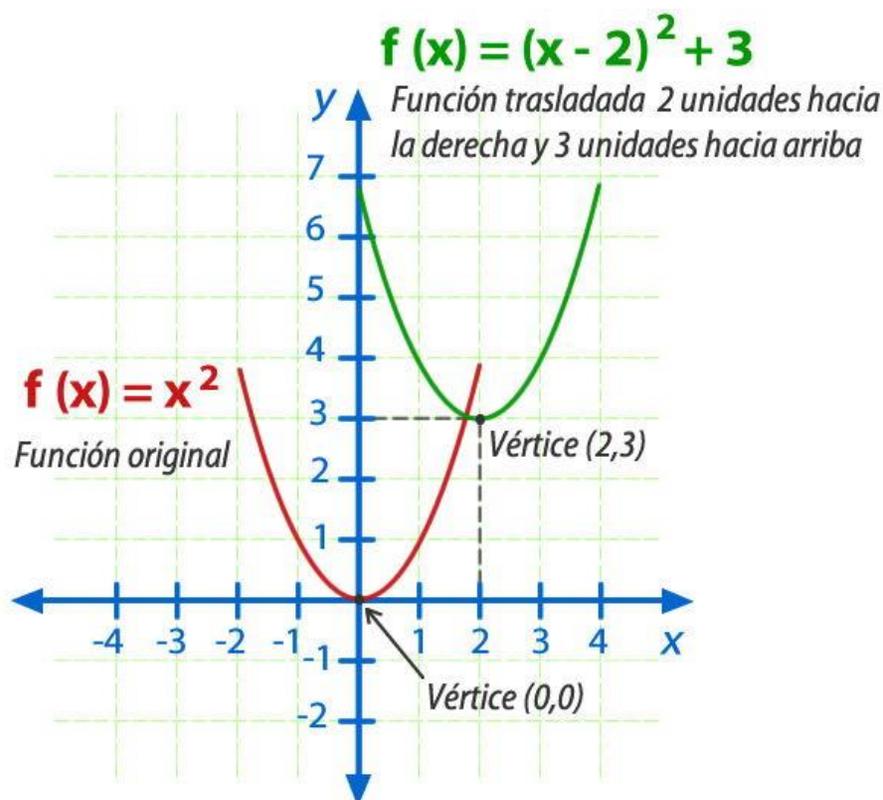
Sea  $y = f(x)$  un modelo gráfico cualquiera dado. Se tiene que al graficar:

1.  $y = f(x + a)$ , es desplazar el modelo gráfico  $y = f(x)$  a unidades hacia la izquierda (se le resta a unidades a la  $x$ ).
2.  $y = f(x - a)$ , es desplazar el modelo gráfico  $y = f(x)$  a unidades hacia la derecha (se le suma a unidades a la  $x$ ).
3.  $y = f(x) + a$ , es desplazar el modelo gráfico  $y = f(x)$  a unidades hacia arriba (se le suma a unidades a la  $y$ ).
4.  $y = f(x) - a$ , es desplazar el modelo gráfico  $y = f(x)$  a unidades hacia abajo (se le resta a unidades a la  $y$ ).

- En los dos primeros casos (1. y 2.) es a la variable  $x$  a la que se le suma o resta el número  $a$ .

- En los dos últimos casos (3. y 4.) es a toda la función  $f(x)$  a la que se le suma o resta el número  $a$ .

**NOTA:** En cada modelo seleccionado se desplaza el origen de coordenadas y a partir del nuevo origen se dibuja la gráfica.



Observa atentamente el siguiente video:

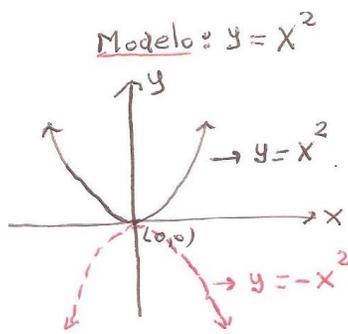


[https://www.youtube.com/watch?v=mdn\\_0nBxz3Q](https://www.youtube.com/watch?v=mdn_0nBxz3Q)

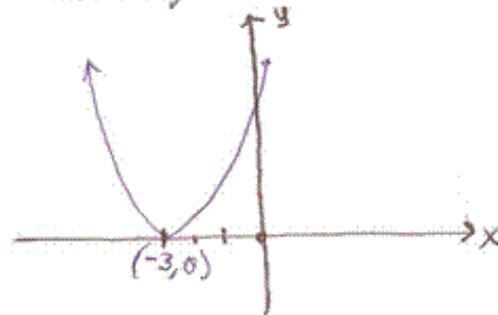
### EJEMPLOS:

Observo detenidamente la forma como mi profesor graficará las siguientes funciones con base en los modelos Matemáticos y a los desplazamientos de gráficas.

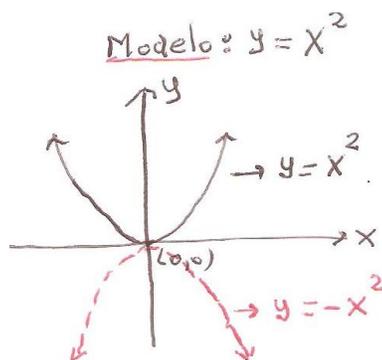
1.  $y = (x + 3)^2$



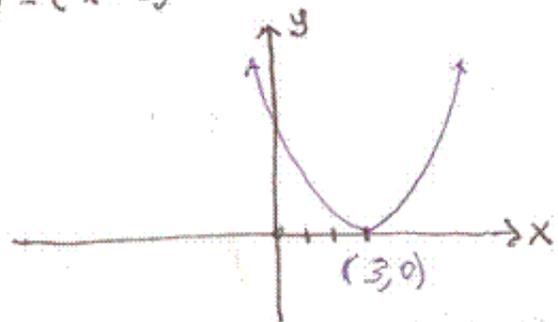
①  $y = (x + 3)^2$



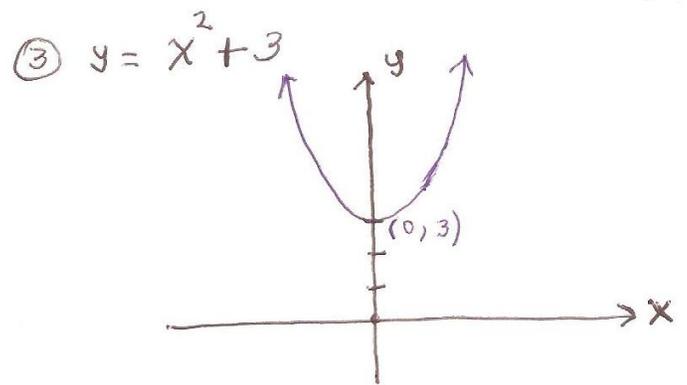
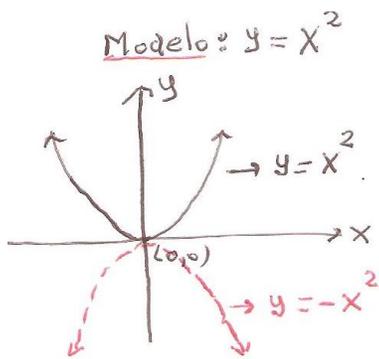
2.  $y = (x - 3)^2$



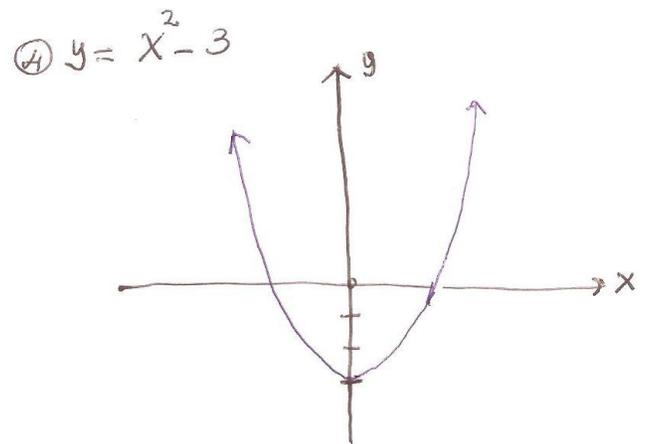
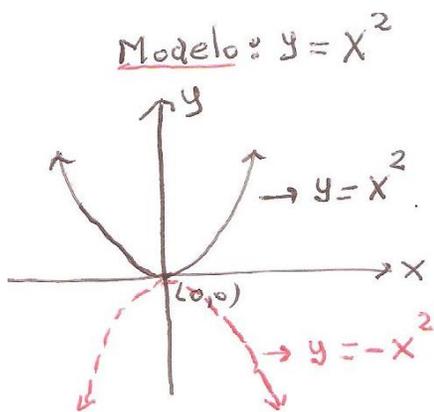
②  $y = (x - 3)^2$



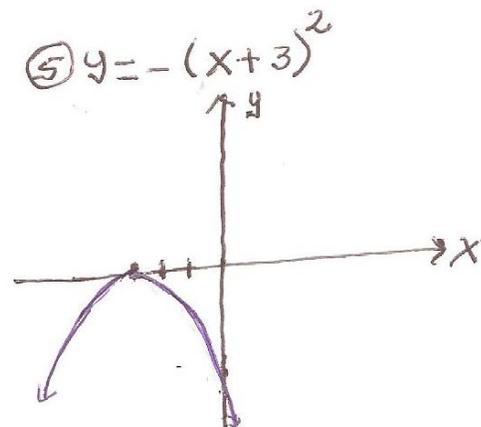
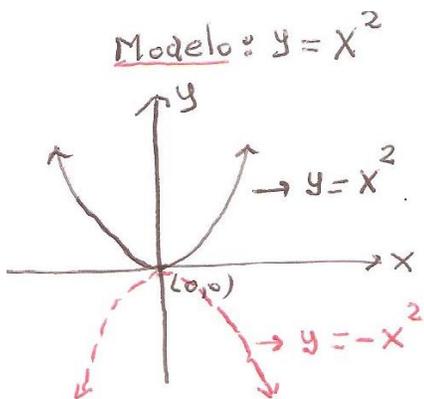
3.  $y = x^2 + 3$



4.  $y = x^2 - 3$

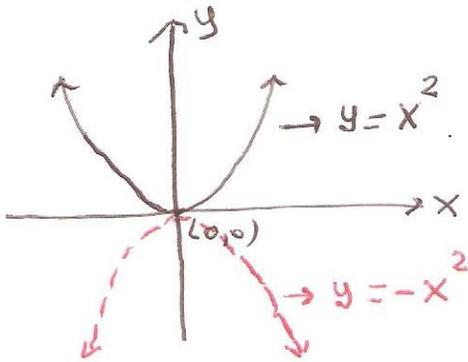


5.  $y = -(x + 3)^2$

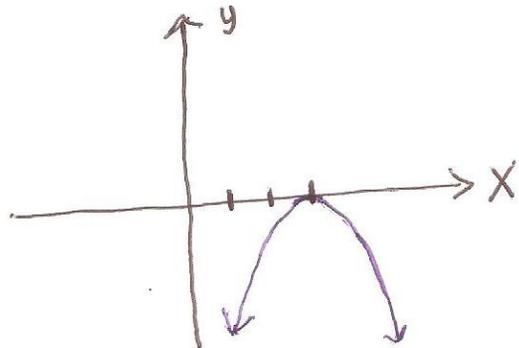


6.  $y = -(x - 3)^2$

Modelo:  $y = x^2$

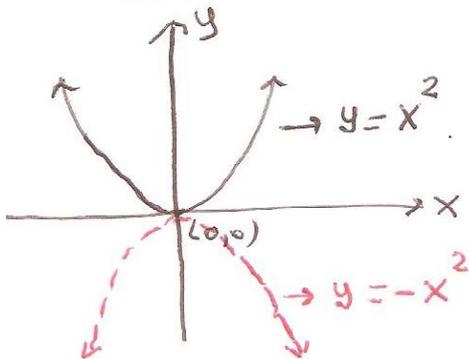


⑥  $y = -(x - 3)^2$

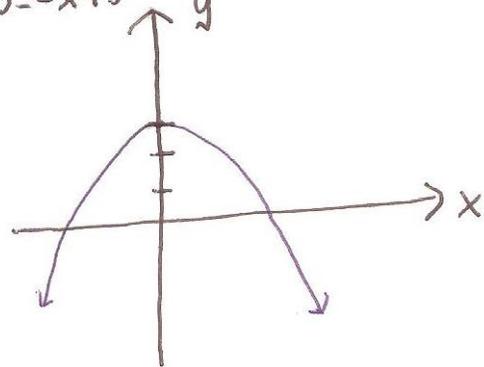


7.  $y = -x^2 + 3$

Modelo:  $y = x^2$

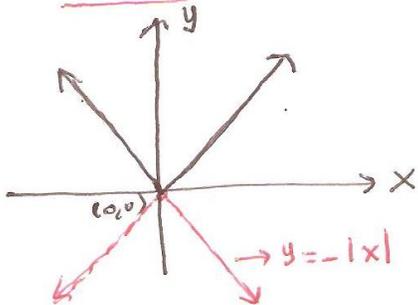


⑦  $y = -x^2 + 3$

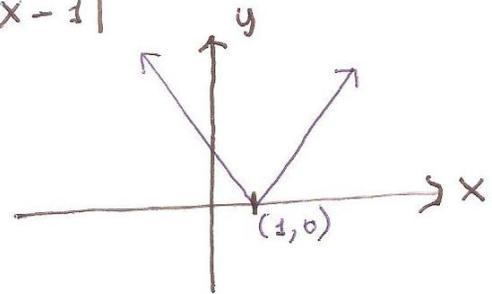


8.  $y = |x - 1|$

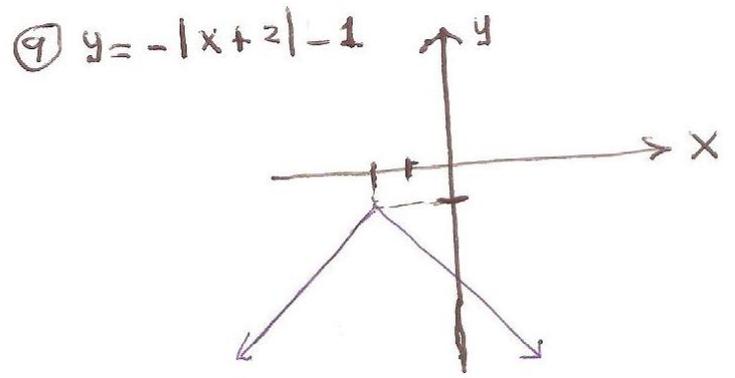
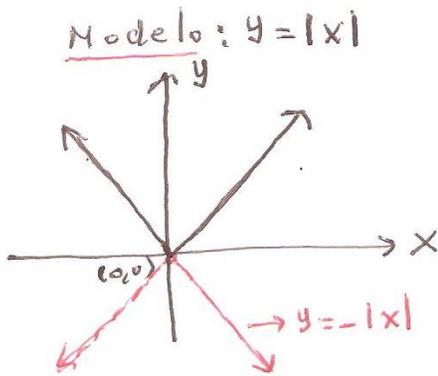
Modelo:  $y = |x|$



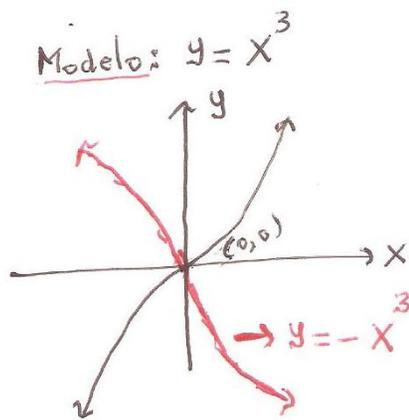
⑧  $y = |x - 1|$



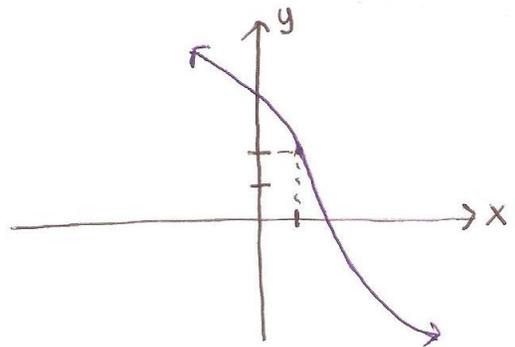
9.  $y = -|x+2| - 1$



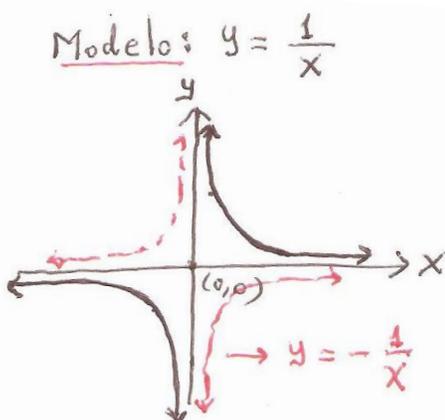
10.  $y = -(1-x)^3 + 2$



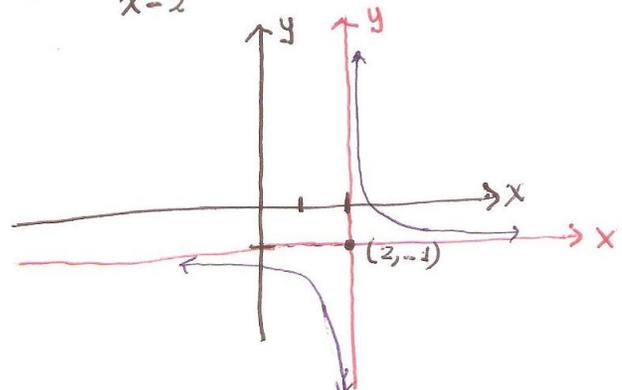
10  $y = -(x-1)^3 + 2$



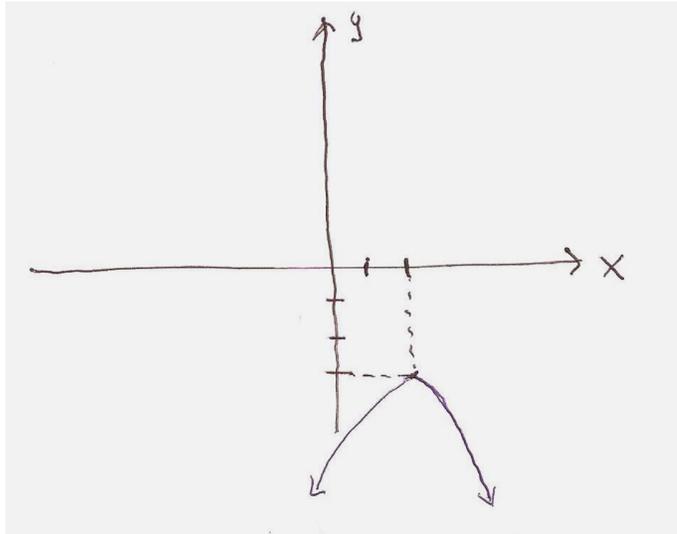
11.  $y = \frac{1}{x-2} - 1$



11  $y = \frac{1}{x-2} - 1$



**MI RETO...** Digo el modelo matemático de la función que corresponde a la siguiente gráfica:



**“No esperes que el destino llegue,  
constrúyelo con cada uno de tus actos”**