# FLOOR FUNCTION





### FLOOR FUNCTION

#### **Didactic purposes:**

Understand the behavior of the floor function by analyzing the graph obtained in GeoGebra.

Analyze the behavior of a floor(b x) + c from a dynamic graph obtained in GG using the sliders a, b, c.

Use the model for determinate *a*, *b*, *c* in a particular problem.

**Definition:** The function floor(x) assigns to each real number x the largest integer less than or equal to x.

Notation: f(x)=[x]

In GeoGebra:

rchivo Edita Vista Opciones H	erramientas Ventana A	yuda Abrir sesión	
<ul> <li>▶</li> <li>▶</li> <li>▶</li> <li>▶</li> <li>↓</li> <li>↓</li></ul>	>, •, •, •, •		4
Vista Algebraica 🛛 🕅	Ayuda de comandos		
	Funciones Matemát	ticas	\$
	arg(x)	conjugado(x)	^
	floor(x)	ceil(x)	
	round(x)	log(b,x)	
	exp(x)	ln(x)	
	lg(x)	ld(x)	
	sen(x)	arcsen(x)	~
	Pega Mostra	ar avuda en línea 🛛 🕄	ij.

## Activity 1.

In the Input Bar it can:

-Write *floor(x)* and press Enter.

-Select **Input Help-Mathematical Functions**-*floor(x)* and double click or click on the button Paste.

The graph of the function is obtained.

This activity consist in analyze the graph for consistency with the definition. Determine the domain and the image.

Activity 2.



In a new window of GeoGebra:

a) Define three sliders with values between 0 and 5.

▶ • ∠ ∠ ▷ ○ ○ 4 \ = +	
	0
<ul> <li>Vista Algebraica</li> <li>Vista Gráfica</li> <li>Usta Gráfica</li> <li>Usta Gráfica</li> <li>Deslizador</li> <li>Haz clic en la Vista Gráfica para po</li> </ul>	sicionar el desliza
6	(6.4
Entrada:	
Deslizador	
Deslizador X Nombre	
Deslizador X Numero Angulo	
Deslizador X Número Ángulo Entero Aleatorio	
Deslizador X Número Ángulo Entero Intervalo Deslizador Animación	

Press OK and repeat two more times for obtain three sliders : *a*, *b*, *c*.

In the **Input Bar** write a floor(b x) + c and press Enter.

Comment: if you write directly this function without previously defining the sliders, GG will ask if **a**, **b**, **c** are sliders and will create them, the default range will be -5 to 5.

Crea deslizadores	×
a=2 Crea algún desli	zador para: a, b, c
Crea deslizadores	Cancela

Use the sliders to analyze the effect of each parameter on the steps.

#### Activity 3.

Determine the values of **a**, **b**, **c** to obtain a function to modelling the cost of a taxi trip based on the number of traveled blocks. Assume the following conditions:

-The travel unit is "block" (100 meters)

-The fixed cost of start is \$23,20.



- -The cost of two blocks travelled is \$2,32.
- No cost is considered for waiting time.

With these values of a, b, c, write the function f(x) = a floor (b x) + c in the Input Bar of a new GG window. To calculate the cost of 10 blocks trip, write in the Input Bar f (10) and press Enter.

Calculate the cost of 2,5 km trip.

Calculate the cost of 1823 meters trip.

