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MEMORY AID TIPS 2.5

Greatest Integer Function Parameters “a” & “b”

Parameters		Geometric Transformations	Important Additional Information
a	If $\|a\| > 1$	Vertical Stretch	• The value of $\|a\|$ determines the vertical distance between each step • If the value of $\|a\|$ is a number other that 1 and it is negative, there are 2 geometric transformation
	If $0 < \|a\| < 1$	Vertical Shrink	
	If $a < 0$	Reflection off x - axis	
b	If $\|b\| > 1$ 	Horizontal Shrink	• The horizontal length of each step is $\|1/b\|$ • If the value of $\|b\|$ is a number other that 1 and it is negative, there are 2 geometric transformation
	If $0 < \|b\| < 1$ 	Horizontal Stretch	
	If $b < 0$ 	Reflection off y - axis	

①

$$y = 2[x]$$

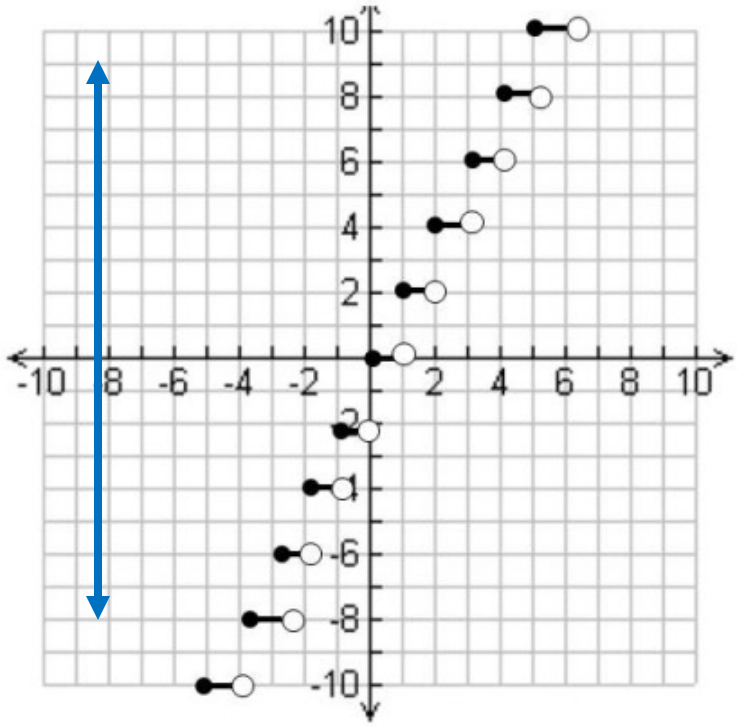
②

When a > 1

a = 2 b = 1

h = 0 k = 0

③



④

x	y
[0, 1[	0
[1, 2[	2
[2, 3[	4
[3, 4[	6
.....	....

- Length of steps = 1
- Vertical distance between each step = 2
- Steps are going up

⑤ ***The geometric transformation of this function is:***

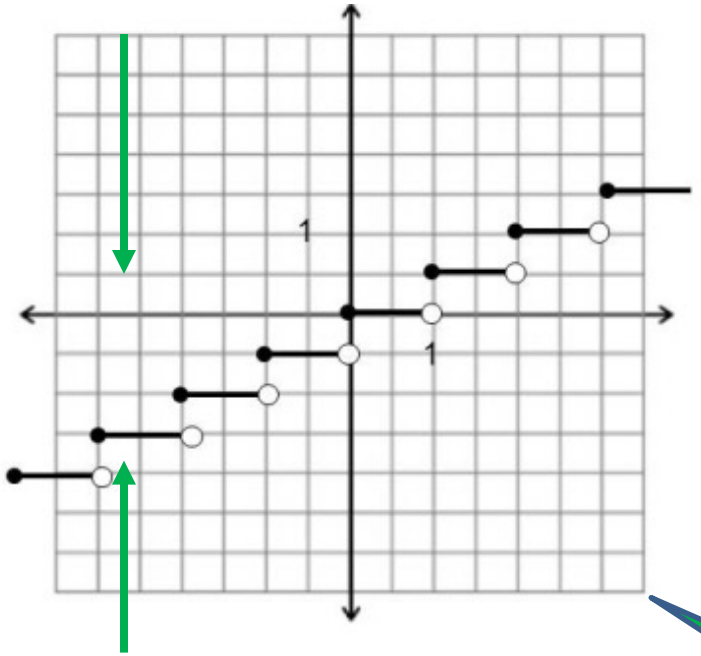
Vertical stretch.

① $y = \underline{0.5}\,[x]$

② When $0 < a < 1$

a = 0.5 b = 1
h = 0 k = 0

③



④

x	y
[0, 1[	0
[1, 2[	0.5
[2, 3[	1
[3, 4[	1.5
.....	....

- Length of steps = 1
- Vertical distance between each step = 0.5
- Steps are going up

⑤ ***The geometric transformation of this function is:***

vertical shrink

①

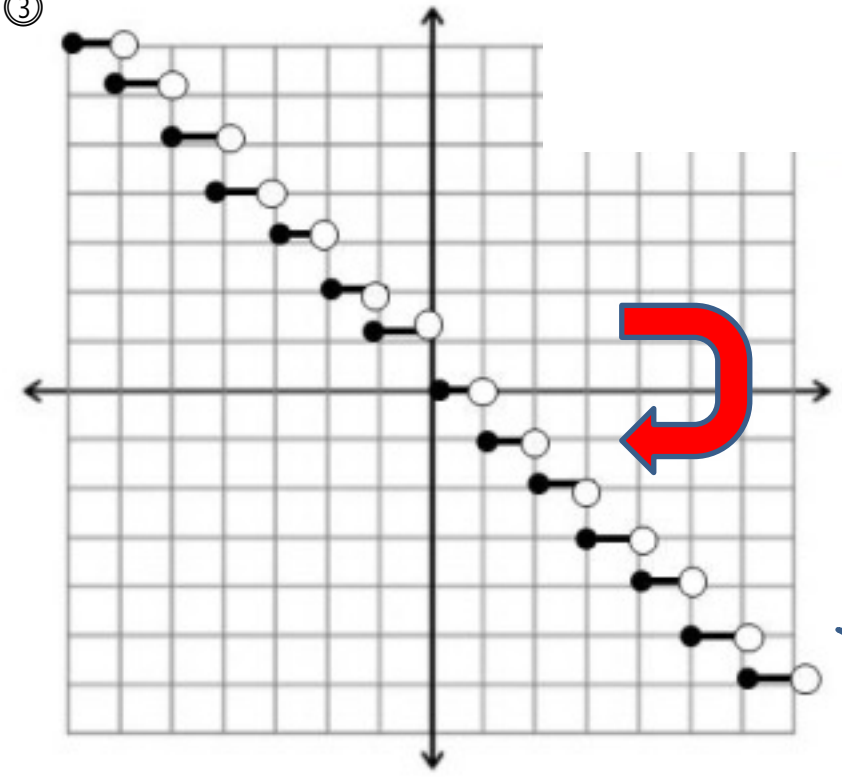
$$y = \underline{-1}\,[x]$$

②

When a < 0

a = - 1 b = 1
h = 0 k = 0

③



④

x	y
[-2, -1[	2
[-1, 0[	1
[0, 1[	0
[1, 2[	-1
.....	....

- Length of steps = 1
- Vertical distance between each step = 1
- Steps are going down

⑤

The geometric transformation of this function is:

Reflection off the x axis

①

$$y = [\,2\,x\,]$$

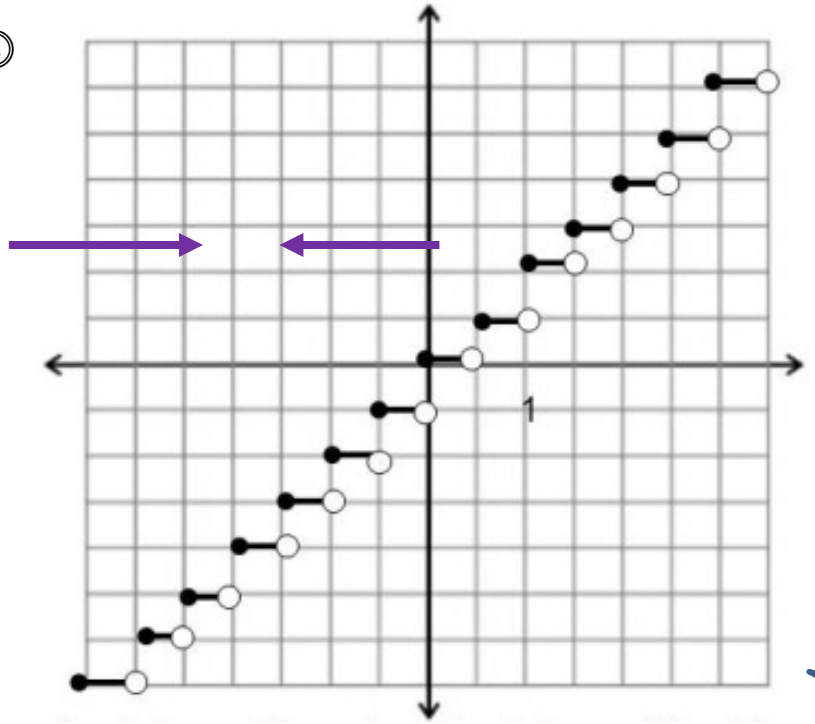
②

When b > 1

a = 1 b = 2

h = 0 k = 0

③



④

x	y
[-1, -0.5[	-2
[-0.5, 0[	-1
[0, 0.5[	0
[0.5, 1[	1
.....	....

- Length of steps = 0.5 = |1/b|
- Vertical distance between each step = 1
- Steps are going up

⑤

The geometric transformation of this function is:

horizontal shrink

When 0 < b < 1

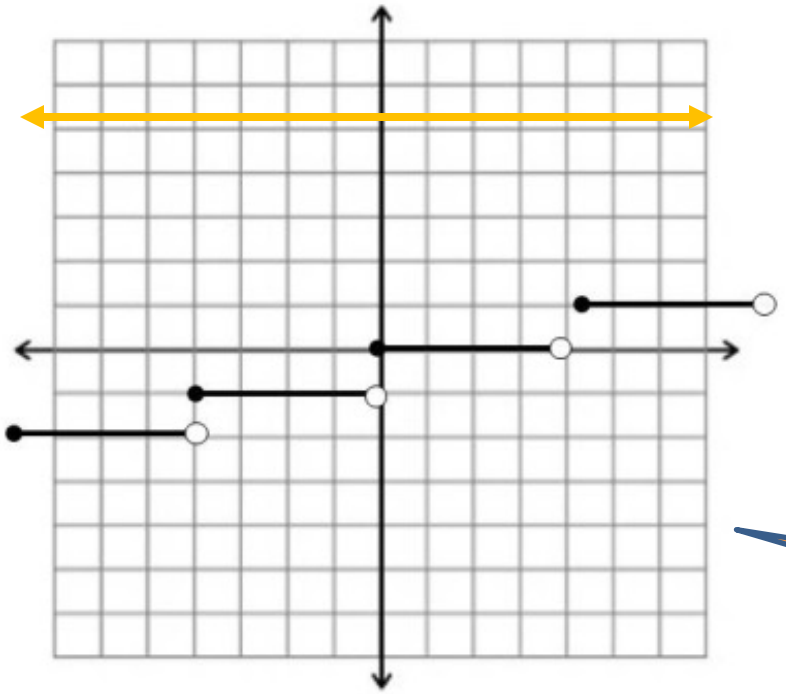
① $y = \left[0.25\,x \right]$

②

a = 1 b = **0.25**

h = 0 k = 0

③



④

x	y
[-8, -4[	-2
[-4, 0[	-1
[0, 4[	0
[4, 8[	1
….	…

- Length of steps = |1/b|= |1/0.25| = 4
- Vertical distance between each step = 1
- Steps are going up

⑤

The geometric transformation of this function

horizontal stretch

①

$$y = \left[\_\_\_ x \right]$$

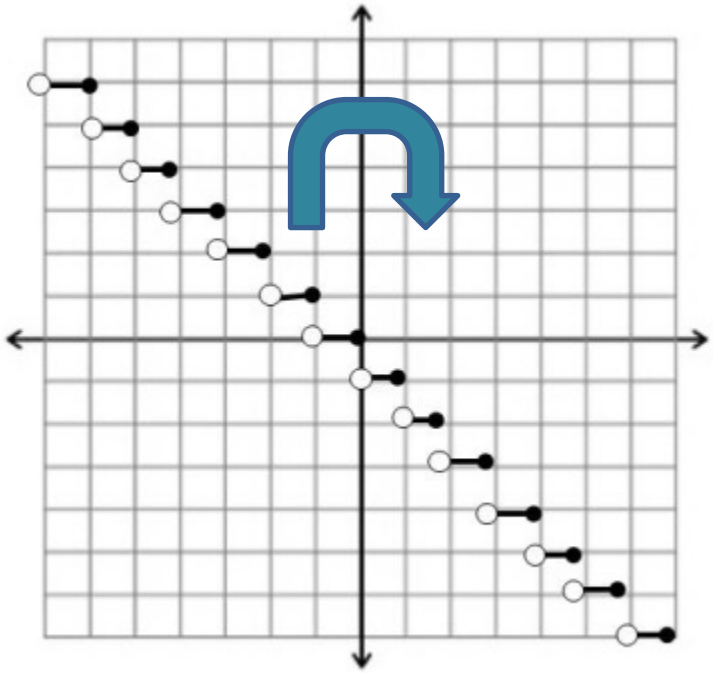
②

When b < 0

a = 1 b = -1

h = 0 k = 0

③



④

x	y
]-2, -1]	1
]-1, 0]	0
]0, 1]	-1
]1, 2]	-2
.....	....

- Length of steps = 1 = |1/b|
- Vertical distance between each step = 1
- Steps are going down

⑤

The geometric transformation of this function is:

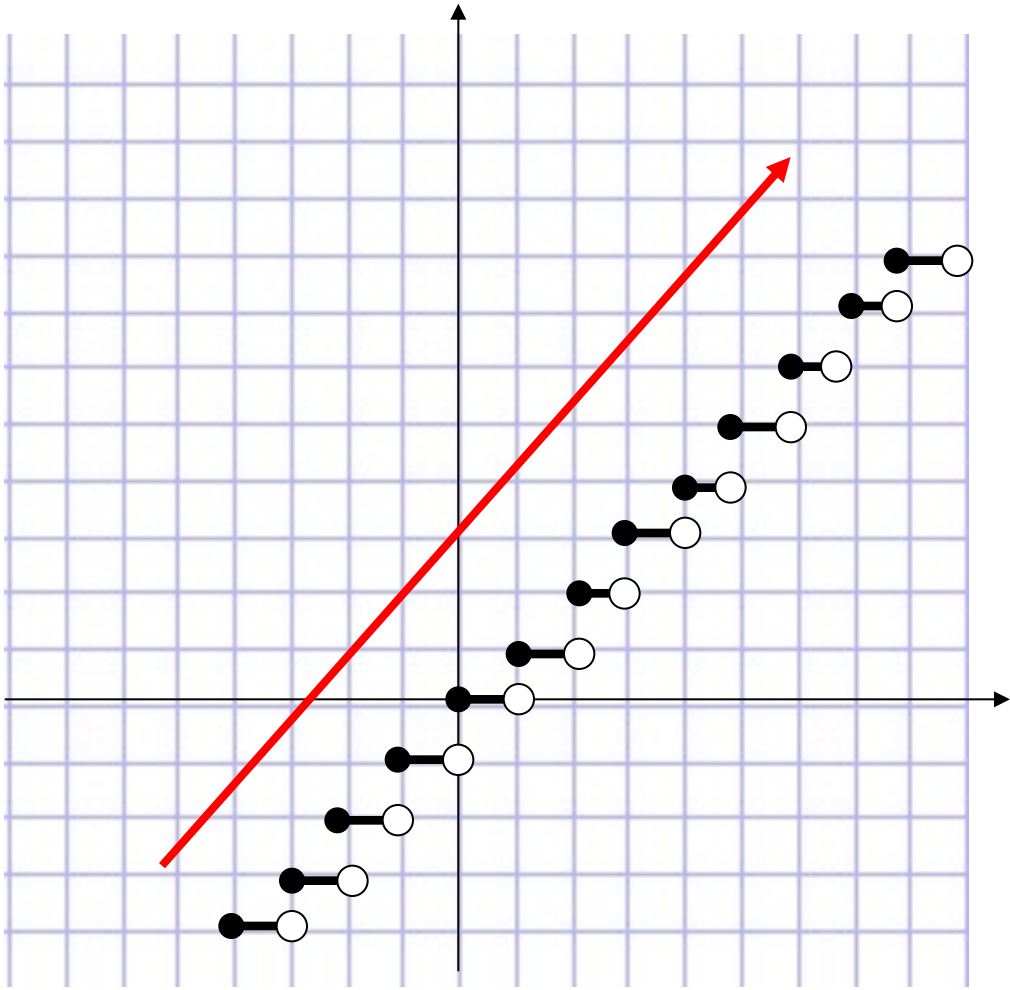
reflection of the y axis

$$f(x) = a[bx]$$

a > 0 b > 0

\+ x + = +

$$a \bullet b = \textit{positive slope}$$

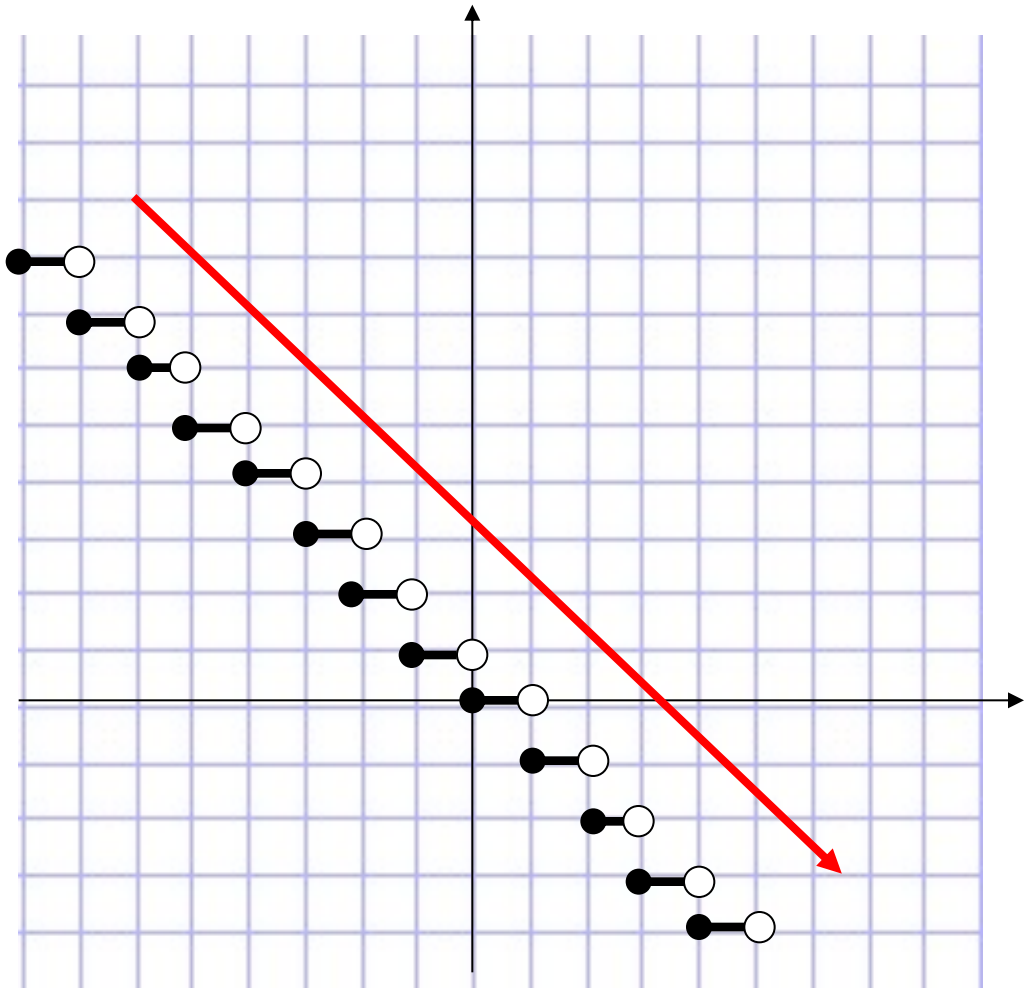


$$f(x) = a[bx]$$

a < 0 b > 0

\- x + = -

$$a \bullet b = \textit{negative slope}$$

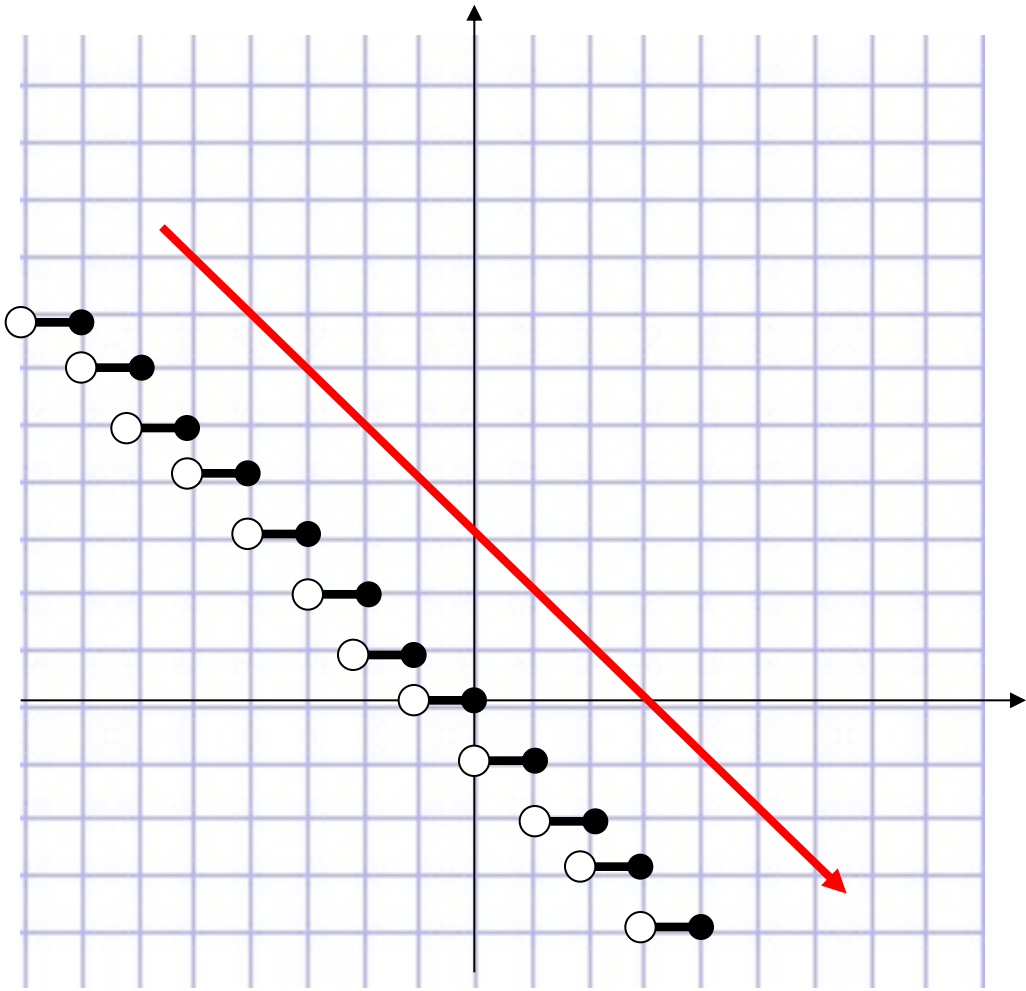


$$f(x) = a[bx]$$

a > 0 b < 0

\+ x - = -

$$a \bullet b = negative\ slope$$



$$f(x) = a[bx]$$

a < 0 b < 0

\- x - = +

$a \bullet b =$ *positive slope*