HM3 HW – GRAPHING STEP FUNCTIONS NAME Key

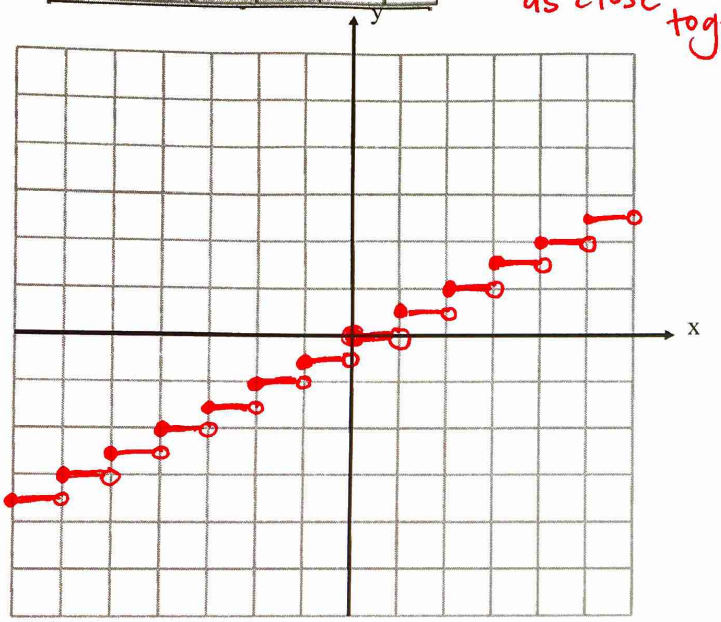
Graph the following step functions. Fill out an x/y chart to create ordered pairs. Describe the transformations from the parent graph.

Floor → Round DOWN

1. $f(x) = \frac{1}{2}\lfloor x \rfloor$

x	0	1/2	1	1.5	2
$f(x)$	0	0	1/2	1/2	1

• steps are 1/2 as tall or twice as close together

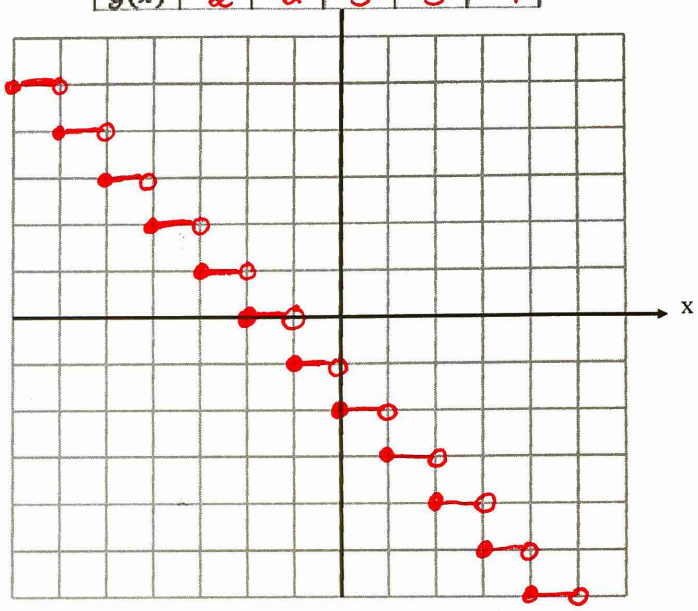


Floor → Round Down

2. $g(x) = -\lfloor x + 2 \rfloor$

• flips
• shifts left 2

x	0	1/2	1	1 1/2	2
$g(x)$	-2	-2	-3	-3	-4

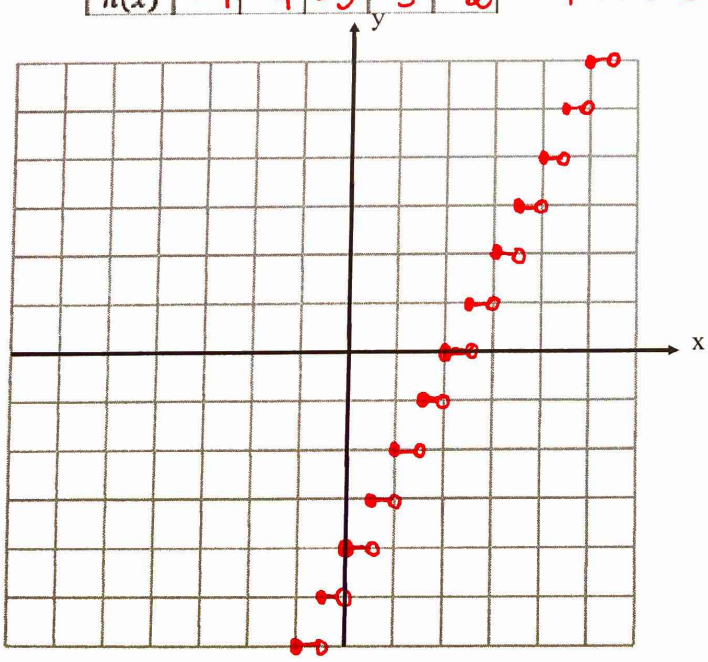


Floor → Round Down

3. $h(x) = \lfloor 2x \rfloor - 4$

• shifts down 4
• steps are 1/2 as wide or two times shorter

x	0	1/4	1/2	3/4	1
$h(x)$	-4	-4	-3	-3	-2

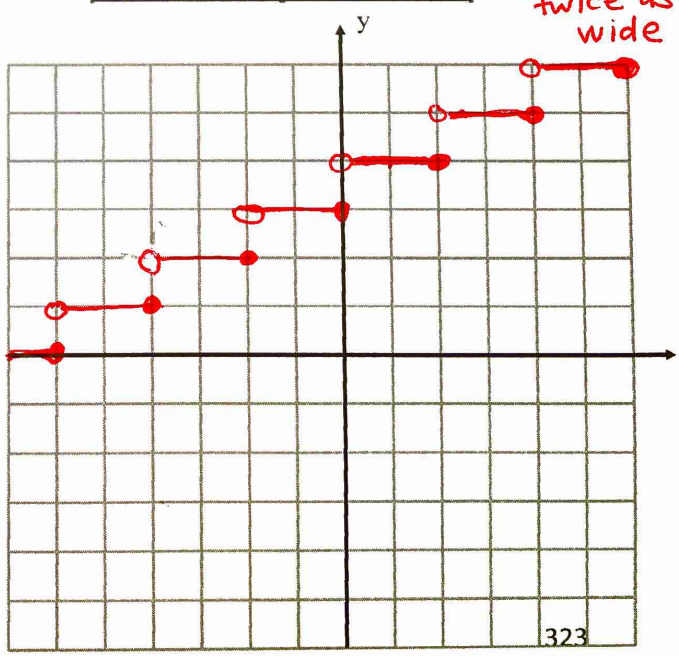


ceiling → Round up

4. $f(x) = \left\lceil \frac{1}{2}x \right\rceil + 3$

• shifts up 3
• steps are twice as wide

x	0	1/2	1	1 1/2	2	2 1/2
$f(x)$	3	4	4	4	4	5

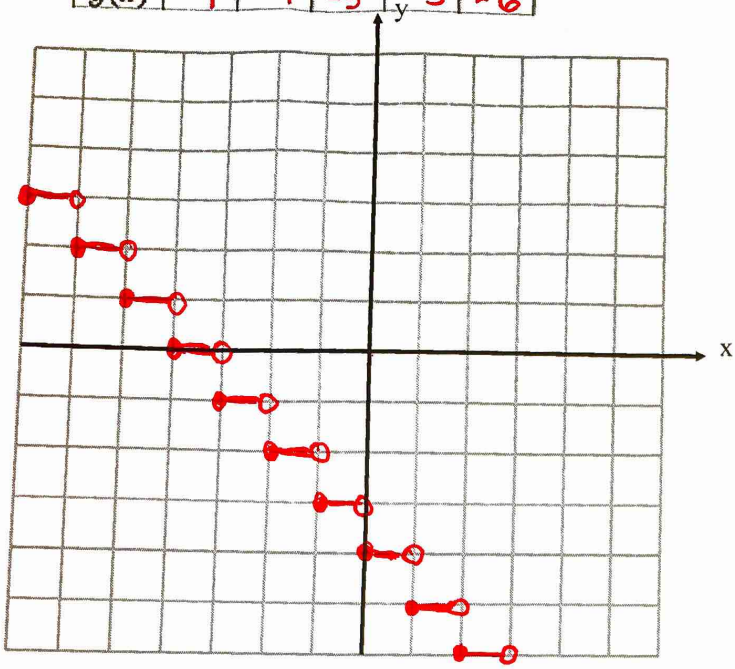


ceiling → round up

5. $g(x) = \lceil -x \rceil - 4$

• shifts down 4
• flips

x	0	1/2	1	1 1/2	2
$g(x)$	-4	-4	-5	-5	-6

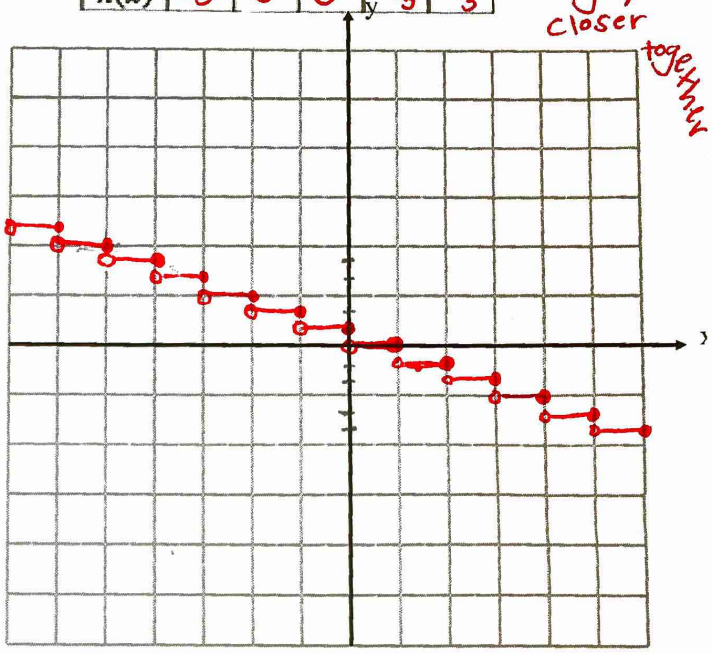


ceiling → round up

6. $h(x) = -\frac{1}{3}\lceil x - 1 \rceil$

• shifts right 1
• flips
• steps are 1/3 as high / closer together

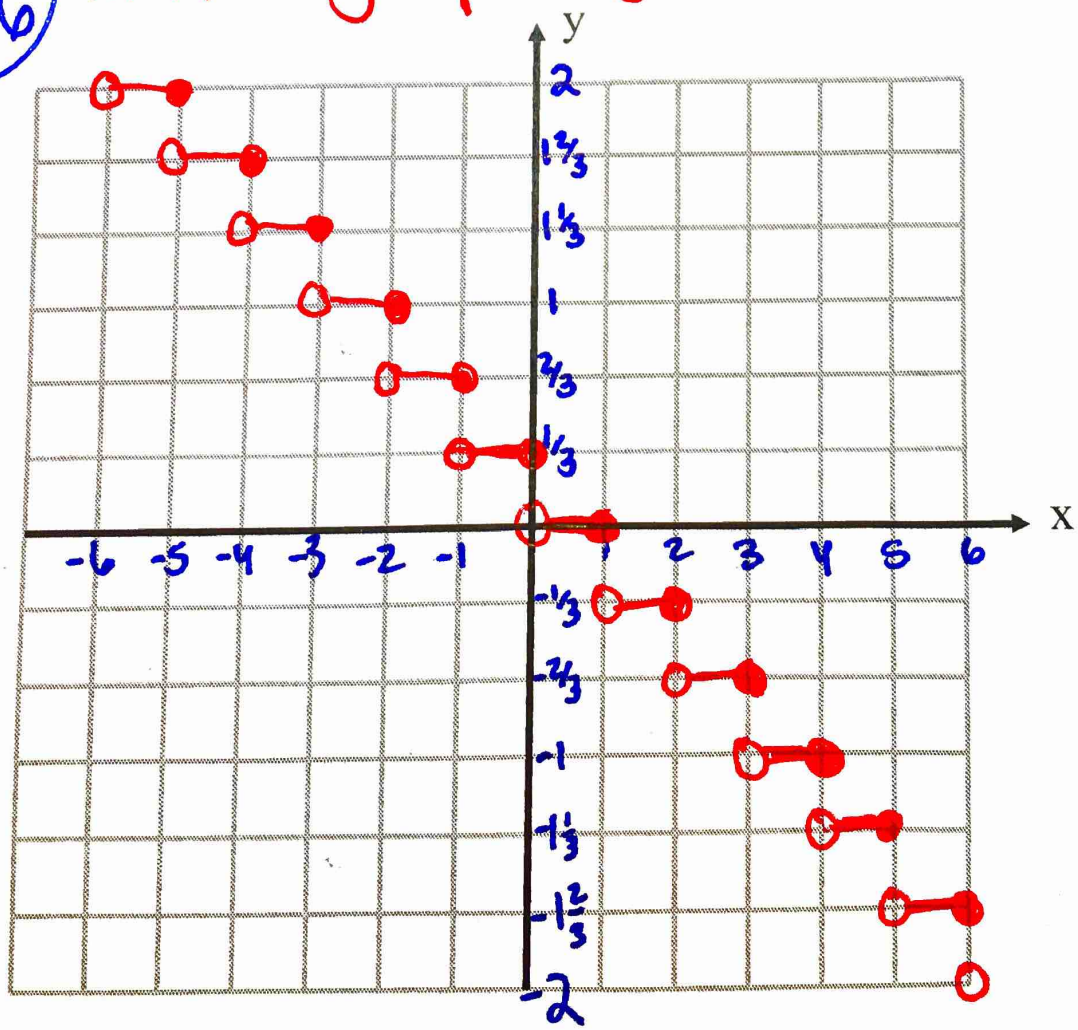
x	0	1/2	1	1 1/2	2
$h(x)$	1/3	0	0	-1/3	-1/3



Another way to graph #6:

you can change your y-axis to go up by increments of 1/3 to make graphing easier

#6



Given that $f(x) = \lfloor x \rfloor$ is the parent function, describe the transformation of g(x). FLOOR

7. $g(x) = \left\lfloor \frac{1}{2}x + 2 \right\rfloor$

- shifts left 4
- steps are twice as wide/long (horizontal stretch)

8. $g(x) = -\lfloor x \rfloor + 4$

- flips
- shifts up 4

9. . $g(x) = \lfloor -x - 6 \rfloor$

- shifts left 6
- flips

Given that $f(x) = \lceil x \rceil$ is the parent function, describe the transformation of g(x). CEILING

10. $g(x) = 2\lceil x \rceil - 7$

- shifts down 7
- steps are twice as tall/higher (vertical stretch)

11. $g(x) = -\lceil 4x \rceil$

- flips
- steps are 1/4 as wide/4 times shorter (horizontal

12. $g(x) = \lceil -x + 1 \rceil + 5$

- shifts up 5
- flips
- shifts right 1