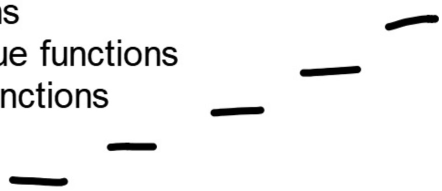
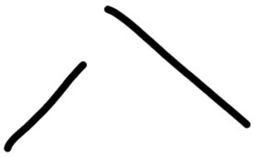
Algebra 1 9.7 $|-6|$

Identify and graph step functions
Identify and graph absolute value functions
Identify and graph piecewise functions



step function
(greatest integer function)
absolute value
piecewise
not traceable



Quiz 9.5-9.6

3) $4v^2 - 24v = -6$

4) $-5w^2 = -17w + 5$

KeyConcept Absolute Value Function

Parent function: $f(x) = |x|$, defined as

$$f(x) = \begin{cases} x \text{ if } x > 0 \\ 0 \text{ if } x = 0 \\ -x \text{ if } x < 0 \end{cases}$$

*Look here first

$y = |x|$

Type of graph: V-shaped

Domain: all real numbers

Range: all nonnegative real numbers

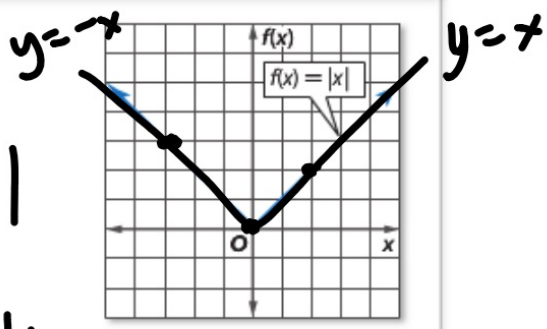
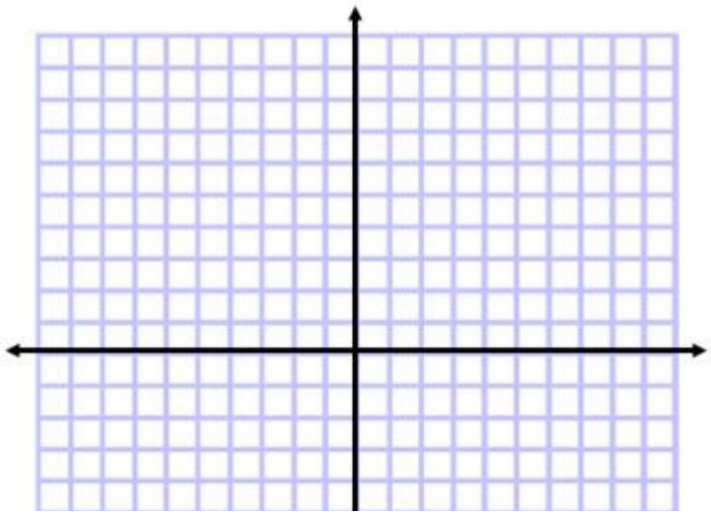


Table of values...

x	|x|	y
0	|0|	0
2	|2|	2
-3	|-3|	3



Parent graph... moves which way?

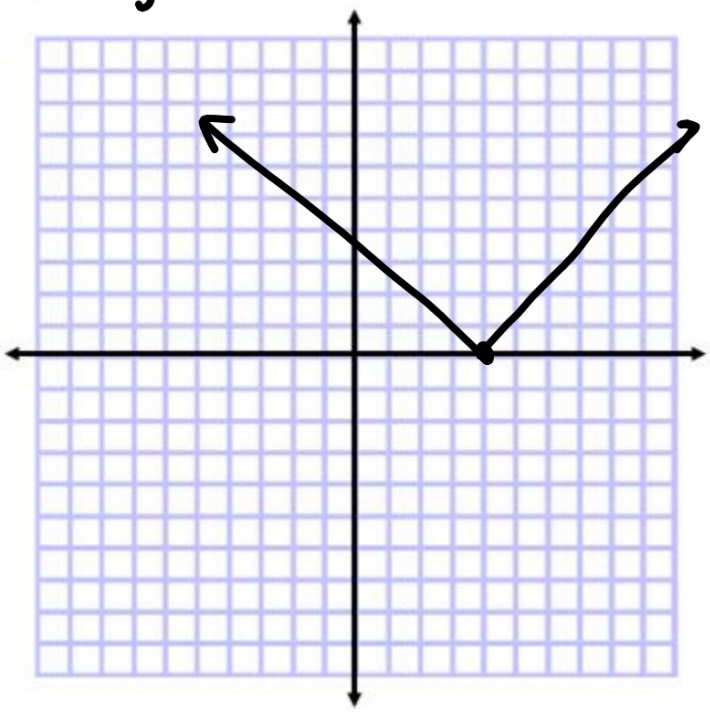
Example 3 Absolute Value Function

Graph $f(x) = |x - 4|$. State the domain and range.

$y = (x-4)^2$

D: ARN

R: $y \geq 0$



Parent graph (factor)

GuidedPractice

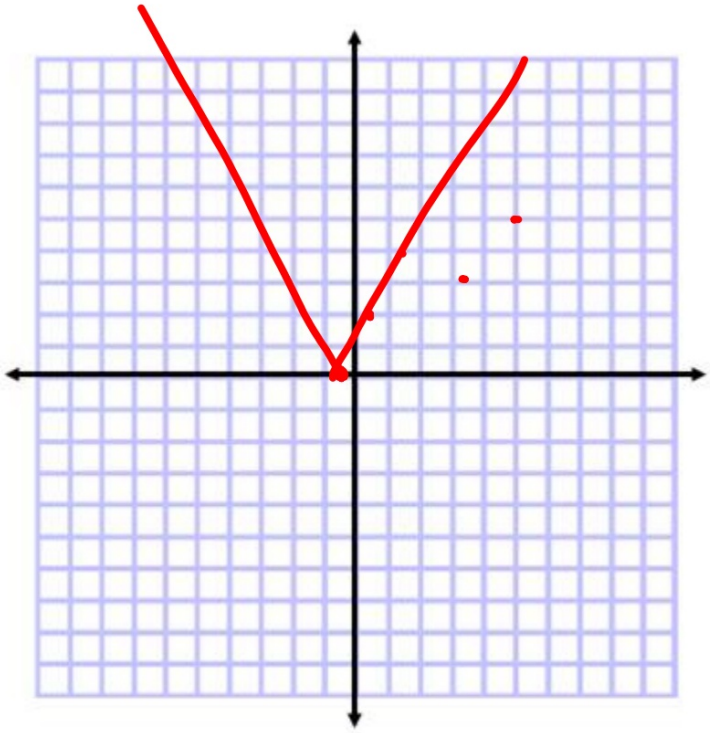
3. Graph $f(x) = |2x + 1|$. State the domain and range.

$f(x) = |x-3|+2$

$|2(x+\frac{1}{2})|$

D: ARN

R: y ≥ 2



Colors

Example 4 Piecewise-Defined Function

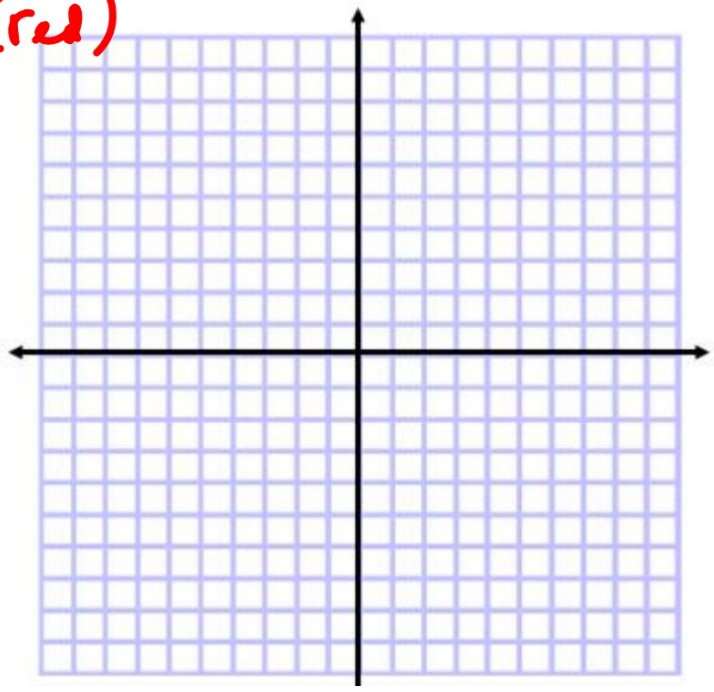
Grapl [redacted] $\begin{cases} -2x & \text{if } x > 1 \\ x + 3 & \text{if } x \le 1 \end{cases}$. State the domain and range.

x = 1

look here first

y = -2x (yellow)

y = x + 3 (red)



1. Note changeover
2. Graph
3. Keep/erase
4. Answer D & R

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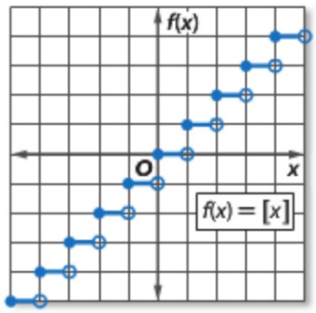
Strict babysitter:

- $5.00 per hour
- Charge 1 hour minimum
- If time goes over, they pay for the whole next hour

Step function

KeyConcept Greatest Integer Function

Parent function:	$f(x) = [\![x]\!]$
Type of graph:	disjointed line segments
Domain:	all real numbers
Range:	all integers

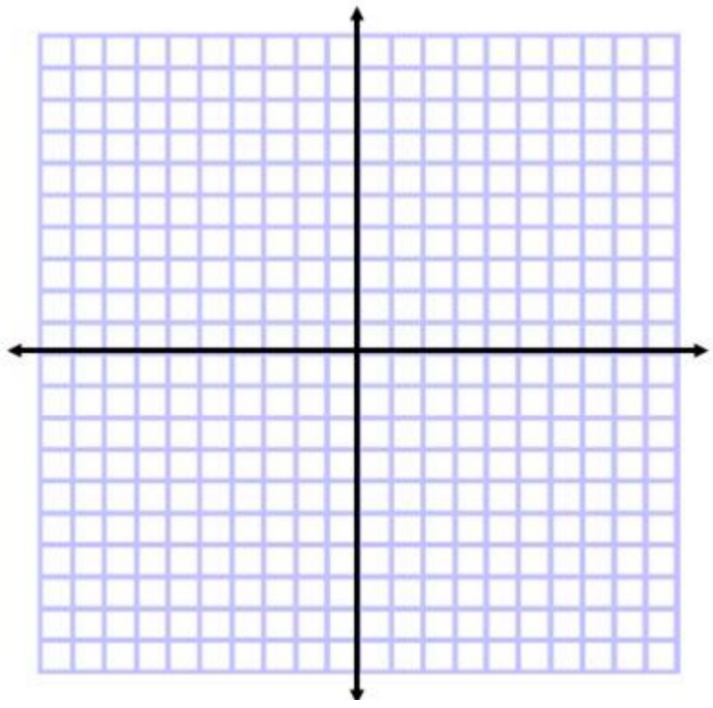


Not continuous

Parent graph

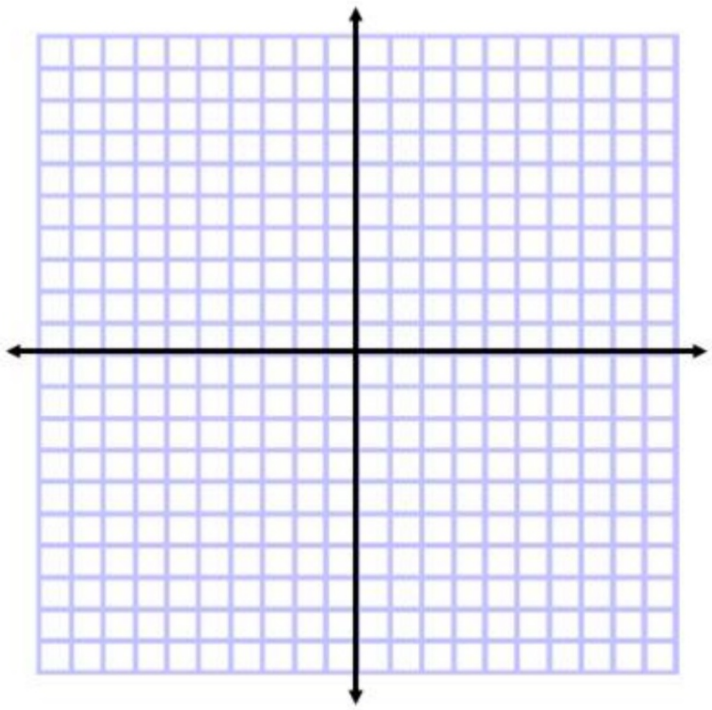
Example 1 Greatest Integer Function

Graph $f(x) = [\![x + 2]\!]$. State the domain and range.



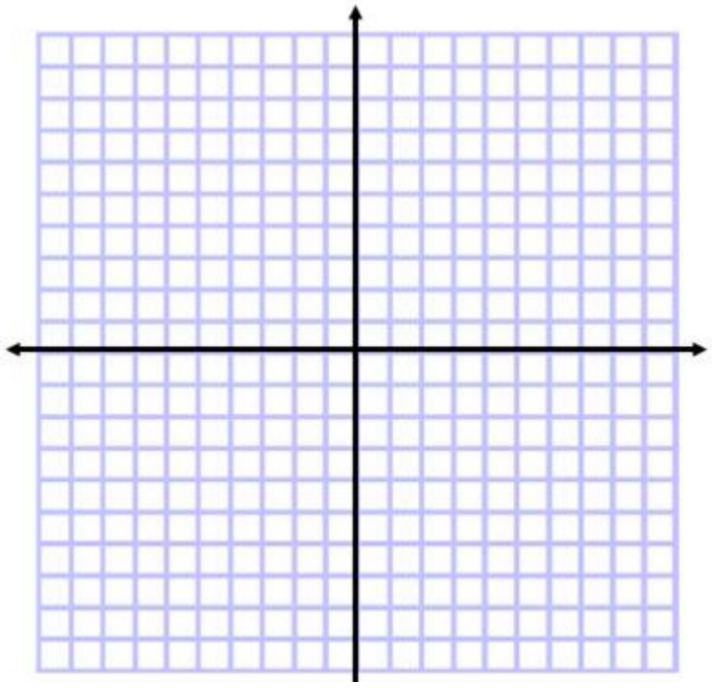
GuidedPractice

1. Graph $g(x) = 2[\![x]\!]$. State the domain and range.



GuidedPractice

2. PARKING A garage charges $4 for the first hour and $1 for each additional hour. Draw a graph that represents this situation.



ConceptSummary Special Functions

Step Function	Absolute Value Function	Piecewise-Defined Function