

2.6. Advanced Algebra Special Functions

DATE: 10/15

Target 2B. Understand the relationship between an equation and its graph (absolute value, piecewise, and step functions)



Piecewise Function: a function that is written using two or more expressions. It consists of different line segments, curves, and rays.

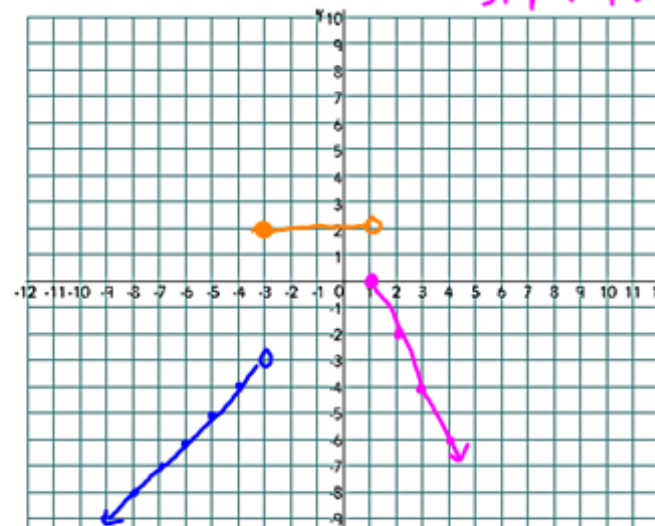
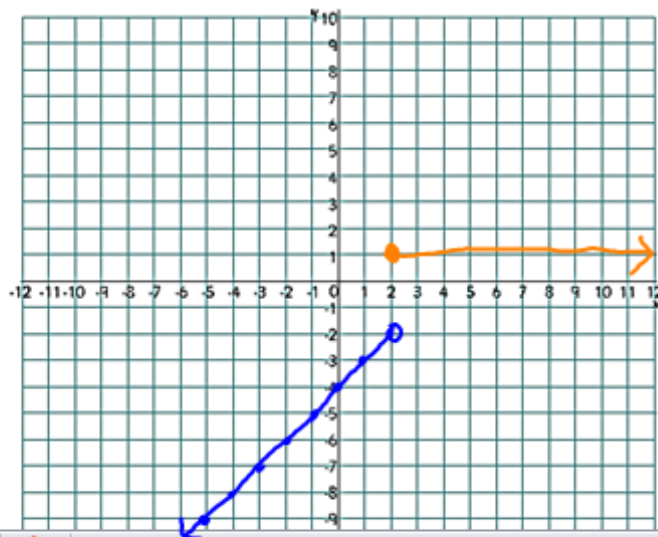
Graph each of the following piecewise functions.

$$1. f(x) = \begin{cases} x-4, & x < 2 \\ 1, & x \geq 2 \end{cases}$$

slope: \uparrow y-int: -4
Horizontal line

$$2. f(x) = \begin{cases} x & \text{if } x < -3 \\ 2 & \text{if } -3 \leq x < 1 \\ -2x + 2 & \text{if } x \geq 1 \end{cases}$$

slope: \uparrow y-int: 0
Horizontal line
slope: \downarrow y-int: 2



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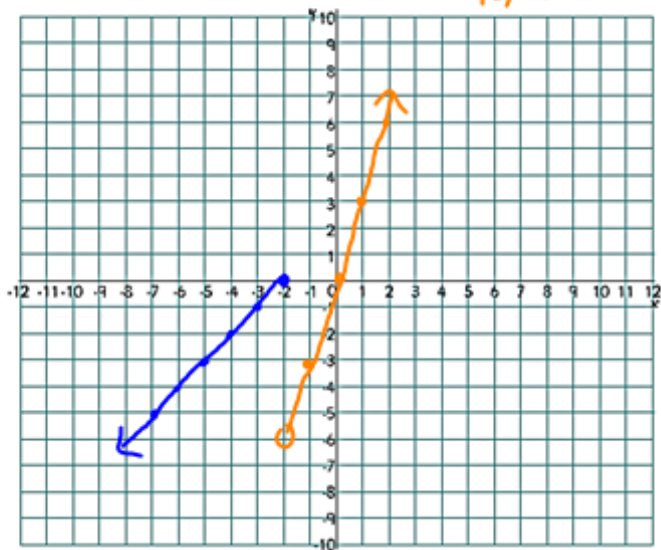
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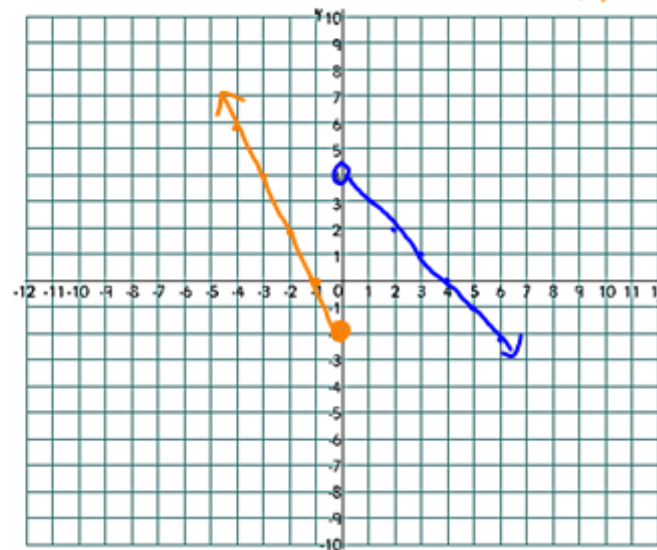
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3. $f(x) = \begin{cases} x+2, & x \leq -2 \\ 3x, & x > -2 \end{cases}$ slope: $\uparrow \rightarrow$ y-int: 2
 slope: $\uparrow \rightarrow$ y-int: 0



4. $f(x) = \begin{cases} 4-x, & x > 0 \\ -2x-2, & x \leq 0 \end{cases}$ slope: $\downarrow \rightarrow$ y-int: 4
 slope: $\downarrow \rightarrow$ y-int: -2



Step Function: a function whose graph is a series of horizontal lines segments or rays.