

Piecewise and Step Functions

Students will be able to  
 -graph piecewise functions  
 -write piecewise function from a graph

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Interval Notation: (a way to write the starting and stopping interval)

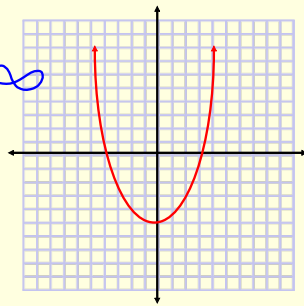
$$-6 < x \leq 10$$

$$x \geq -4$$

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State the domain and range in interval notation.

D:  $-\infty < x < \infty$   
 R:  $y \geq 5$



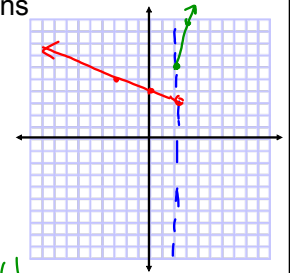
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Graphing Piecewise Functions

Graph:

$$f(x) = \begin{cases} 4x - 2, & x \geq 2 \\ -\frac{x}{3} + 4, & x < 2 \end{cases}$$

Evaluate:  
 $f(0) = -\frac{0}{3} + 4 = 4$   
 $f(9) = 4 \cdot 9 - 2 = 34$



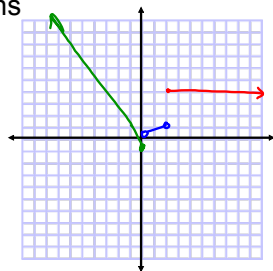
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Graphing Piecewise Functions

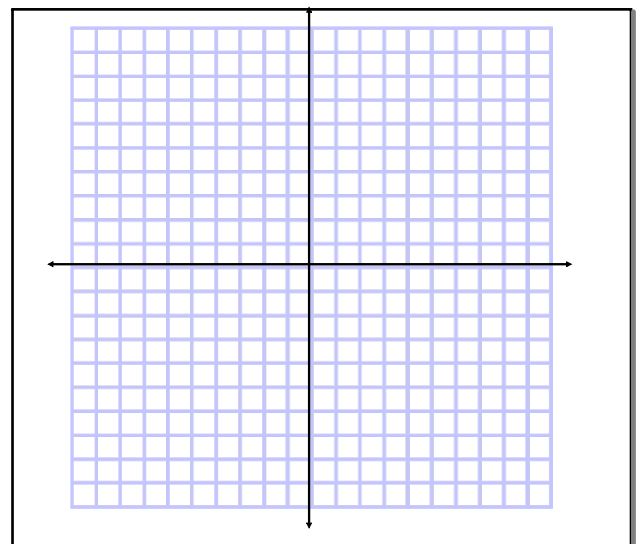
Graph:

$$f(x) = \begin{cases} -2x - 1, & x \leq 0 \\ \frac{x}{2}, & 0 < x < 2 \\ 4, & x \geq 2 \end{cases}$$

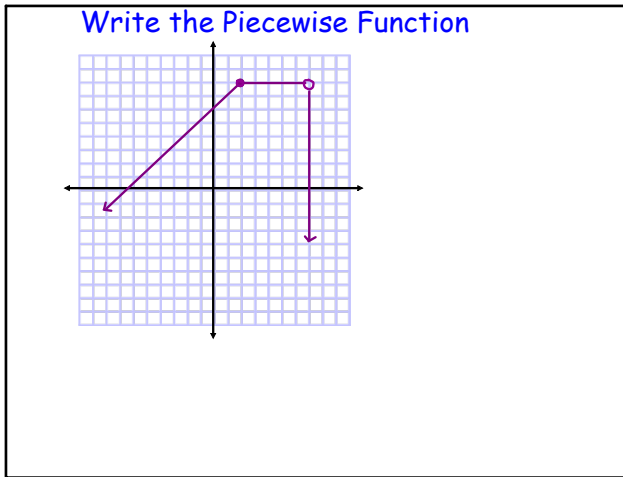
Evaluate:  
 $f(0) = -2(0) - 1 = -1$   
 $f(9) = 4$



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Step Functions:

Step functions can be rounding up or rounding down functions.

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Rounding Up:

$\lceil x \rceil$        $\lceil 5.46 \rceil =$

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Greatest Integer Function or Rounding Down Function:

$\lfloor x \rfloor$       Ex:  $\lfloor 7.921 \rfloor$

$\lfloor x \rfloor$

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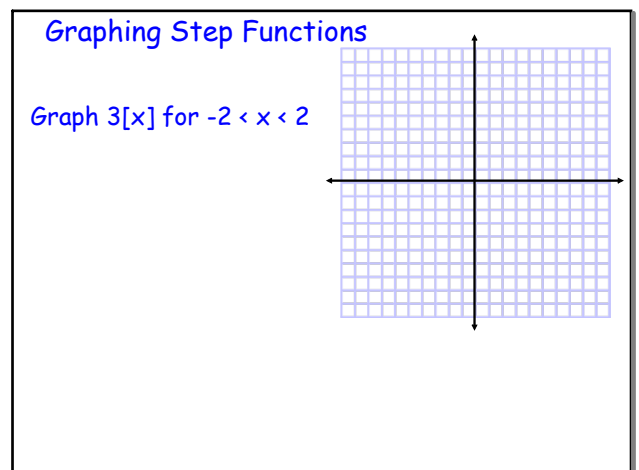
$\lceil 4.5 \rceil$        $\lfloor 6.1 \rfloor$

$\lceil -2.3 \rceil$

$\lceil 6.0007 \rceil$

$\lfloor -2.15 \rfloor$

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Sep 30-2:19 PM

Hwk: packet over  
Piecewise and Step  
Functions

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## Attachments

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Piecewise Functions continued.notebook