

JANUARY 7

What are the properties of
functions?

(What makes a graph a function?)

List the different families of
functions.



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Students will verbally explain how to
graph piecewise functions

(using the words:
domain, curve, defined...)



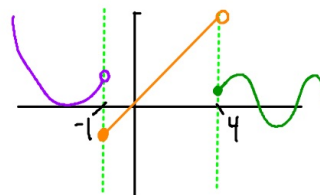
piecewise
function

function that is defined
in pieces

different equations for
different domains (x-values)

domains do not overlap

$$y = \begin{cases} (x+2)^2 & , x < -1 \\ 3x & , -1 \leq x < 4 \\ \sin x & , x \geq 4 \end{cases}$$



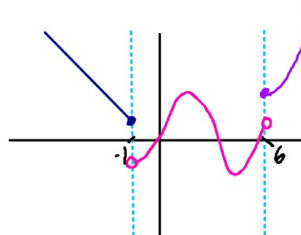
open circle

$<$, $>$ (not equal)

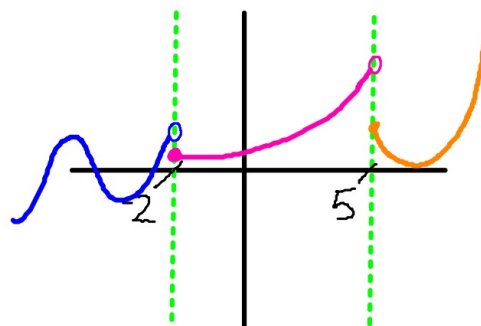
closed circle

\leq , \geq (can be equal)

$$y = \begin{cases} -2x & , x \leq -1 \\ \sin x & , -1 < x < 6 \\ e^x & , x \geq 6 \end{cases}$$



$$y = \begin{cases} \sin x & , x < -2 \\ e^x & , -2 \leq x < 5 \\ (x-6)^2 & , x \geq 5 \end{cases}$$



Food Feeding Chart	
Weight of Dog (in pounds)	Daily Amount of Food (in ounces)
3	3
12	12
20	20
50	35
100	60
Over 100	60 ounces plus 6 ounces for each additional 10 pounds of weight

Adult dogs that weigh up to 20 pounds are classified as *small* dogs. Dogs that weigh 20 to 100 pounds are classified as *mid-size* dogs. Finally, dogs that weigh more than 100 pounds are classified as *large* dogs.

→ weight over 100

Write a linear equation that expresses the ounces of dog food in terms of the dog's weight for each size dog.

small
 $y = x$

medium
 $y = \frac{1}{2}x + 10$

large
 $y = 60 + .6(x - 100)$

What is the domain for each equation?

$0 < x \leq 20$

$20 < x \leq 100$

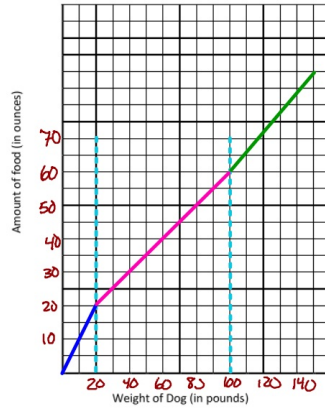
$y = \frac{3}{5}(x - 100) + 60$

$y = \frac{3}{5}x$

Graph your function:

Write your equations as a piecewise function.

$x > 100$



$$y = \begin{cases} x, & 0 < x \leq 20 \\ \frac{1}{2}x + 10, & 20 < x \leq 100 \\ \frac{3}{5}x, & x > 100 \end{cases}$$