

### Scoring

Number of Cards	1	2	3	4	5
Linear Function	1	2	3	4	
Quadratic Function	1	3	6	10	15
Cubic Function	1	2	5	12	
Square Root Function	2	4	6		
Rational Function	1	3	5	7	
Exponential Function	1	2	4	8	
Logarithmic Function	1	2	3	4	
Piecewise Defined Function	1	2	3	5	
Sine Function	1	2	3		
Cosine Function	1	2	3		
Tangent Function	1	2	3		

Find the number of points you earn for each function family under the number of cards you played in the function family.

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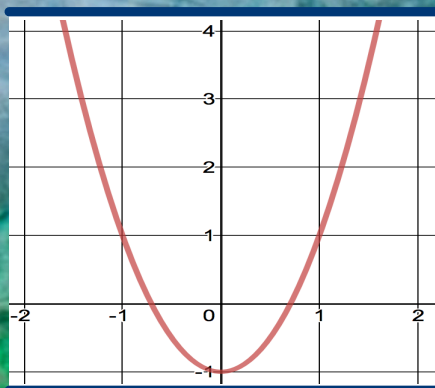
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Find the number of points you earn for each function family under the number of cards you played in the function family.

$$f(x) = \frac{12}{x}$$

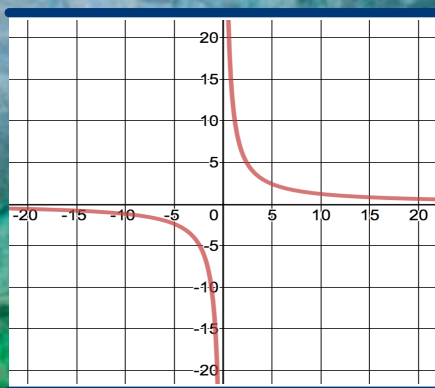
$$f(x) = 2x^2 - 1$$

x	y
-2	7
-1	1
0	-1
1	1
2	7



As  $x$  changes by a constant value,  $y$  changes linearly.

As  $x$  changes by a constant value, the second differences between  $y$ -values are constant.



$$f(x) = 2x - 1$$

x	y
-2	-5
-1	-3
0	-1
1	1
2	3

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Functions  
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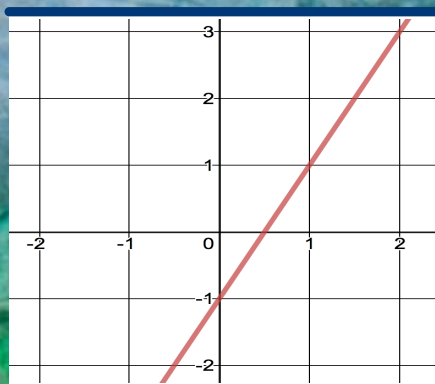
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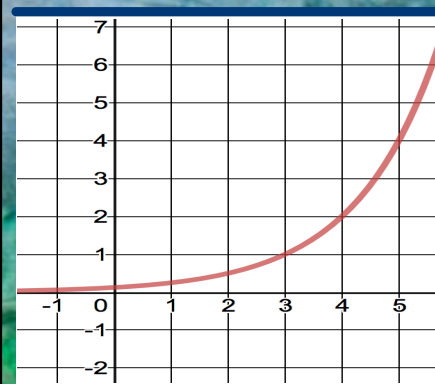
x	y
1	12
2	6
3	4
4	3
6	2

$$f(x) = 2^{x-3}$$

x	y
1	0.25
2	0.5
3	1
4	2
5	4

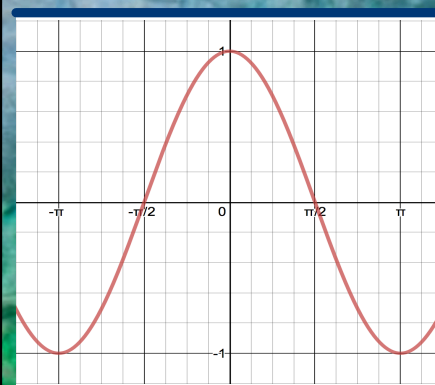


As  $x$  changes by a constant value,  $y$  changes by a constant value.



As the  $x$ -values tend to infinity, the  $y$ -values approach 0.

$$f(x) = \cos(x)$$



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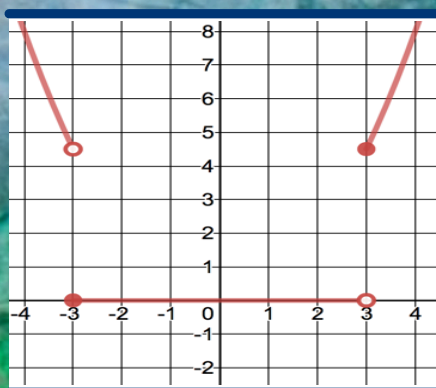
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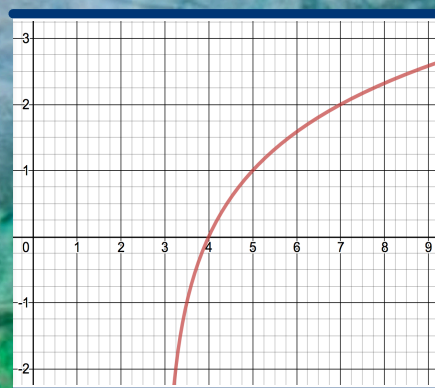
$$f(x) = \sqrt{x}$$

$$f(x) = \begin{cases} 0.5x^2, & x < -3 \\ 0, & -3 \leq x < 3 \\ 0.5x^2, & x \geq 3 \end{cases}$$

x	y
-5	12.5
-3	0
-1	0
1	0
3	4.5



The function has discontinuities at  $x = -3$  and  $x = 3$ .



x	y
0	0
1	1
4	2
9	3
16	4

$$f(x) = \log_2(x - 3)$$

x	y
3	Undefined
4	0
5	1
6	1.585
7	2

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$$f(x) = 2$$

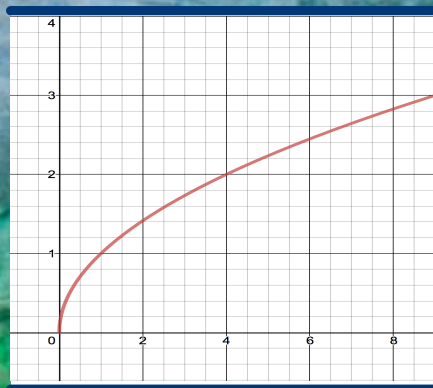
Swap for double  
the functions on  
a later turn.

$$f(x) = 2$$

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a later turn.

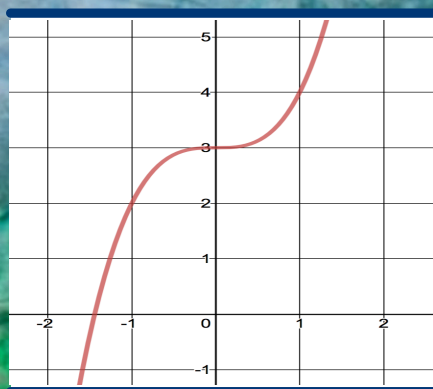
This function is  
the inverse of  
 $f(x) = 2^{x-3}$ .

As  $x$  changes by a  
constant rate, the ratio  
between consecutive  
 $y$ -values of this  
function is constant.



$$f(x) = x^3 + 3$$

$x$	$y$
-2	-5
-1	2
0	3
1	4
2	11



As  $x$  changes at  
a constant rate,  $y$   
changes at a  
quadratic rate.

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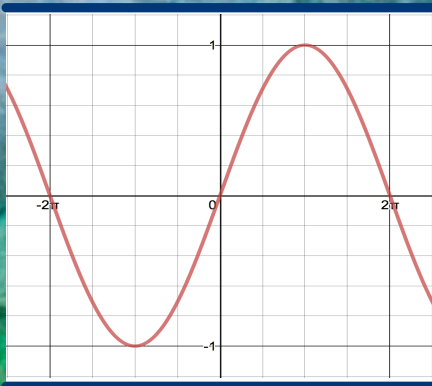
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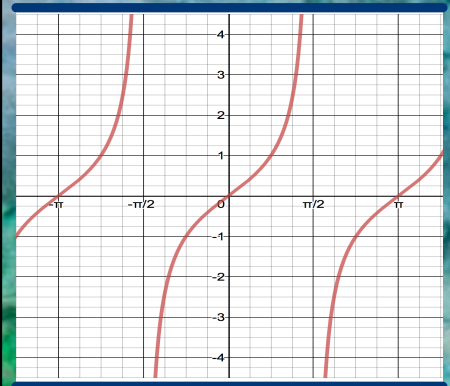
Triple the points for  
one set of matching  
trigonometric  
functions.

$$f(x) = \sin(0.5x)$$

Triple the points for  
one set of matching  
trigonometric  
functions.



The period of  
this function is  
 $2\pi$ .



The period of  
this function is  
 $4\pi$ .

$$f(x) = \tan(x)$$

The period of  
this function is  
 $\pi$ .

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