Bellwork Alg 2 Wednesday, October 2, 2019

1. Given this inverse function: $f^{-1}(x) = \sqrt{\frac{x-1}{7}} + 3$

Find the equation of the original function $f(x)$ and the domain restriction that created this inverse.

$f(x) =$ Domain restriction:

2. What type of function would describe the inverse of this data?

X	–2	1	6	13	22
Y	1	2	3	4	5

3. The y-values in the table are called triangular numbers because those numbers of objects can be shaped to form a triangle. What type of function would model the relationship if the number of rows in the triangle, x, is dependent on the number of pennies, y?

x	1	2	3	4	5
y	1	3	6	10	15

- linear
- exponential
- quadratic
- square root

Bellwork Alg 2 Wednesday, October 2, 2019

ANSWERS

1. Given this inverse function: $f^{-1}(x) = \sqrt{\frac{x-1}{7}} + 3$

Find the equation of the original function $f(x)$ and the domain restriction that created this inverse.

$f(x) = 7(x-3)^2+1$ — 7× taller; 3 right; 1 up

Domain restriction: $x \geq 3$

THE ORIGINAL FUNCTION IS THE INVERSE OF THE INVERSE:

$x = \sqrt{\frac{y-1}{7}} + 3$ (2) (3) (4) (1) $\longrightarrow$ $f(x) = 7(x-3)^2+1$

2. What type of function would describe the inverse of this data?

X	−2	1	6	13	22
Y	1	2	3	4	5

orig

X	Y
−2	1
1	2
6	3
13	4
22	5

NOT A CONSTANT change in X

SO SWITCH COLUMNS to create the inverse

$\Longrightarrow$

inverse relation

X	Y	1st diff	2nd diff
1	−2		
2	1	3	
3	6	5	2
4	13	7	2
5	22	9	2

↑ constant 2nd difference

INVERSE IS A QUADRATIC

3. The y-values in the table are called triangular numbers because those numbers of objects can be shaped to form a triangle. What type of function would model the relationship if the number of rows in the triangle, x, is dependent on the number of pennies, y?

x	1	2	3	4	5
y	1	3	6	10	15

- ○ linear
- ○ exponential
- ○ quadratic
- ○ square root

orig

X	Y	1st diff	2nd diff
1	1		
2	3	2	
3	6	3	1
4	10	4	1
5	15	5	1

CONSTANT difference in X so see if there is a CONSTANT diff in Y

constant 2nd diff in original data so original data is modeled by a quadratic

Therefore, the inverse will be modeled with a square root function