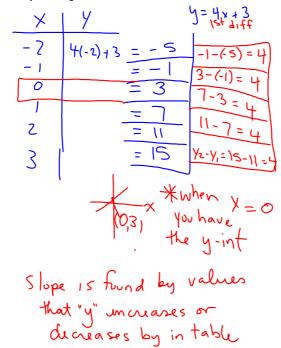
Putting it all together! One final method for the equation of a line

Given
$$y = 4x + 3$$

What if you were given this table to fill in:



First Differences

hle are chang

- Check to see if the values of the independent variable are changing by a constant amount (this is a must).
- Calculate first differences by subtracting the consecutive dependent variable values. ()
- If the first differences are constant then the relationship is linear.
- If the first differences are not constant the relationship is non-linear relation.

Now Try the following:

y the following.		ist diff	
X	у	123 9177	
1	4 .	1 1 - 8 11-4	
2	8 -	$\frac{y_2 - y_1 = 8 - 9 - 1}{100000000000000000000000000000000000$	Linean
3	12	16-12 = 4	· · · · · · · · · · · · · · · · · · ·
4	16	30-16 = 4	
5	20	40 10	
	-Inean Ist n	because	

Calculate the first differences. Decide whether the relation is linear or non-linear.

	X	У	diff	
	-2	5		\ <u>\</u>
	-1	2 .	2-5 = -3	Linear
	0	<u> </u>	-1-2 = -3	ا ا
4-	int1	-4	-4-(-1)= -3	ble. Sope
'	2	-7 -	-7-(-4)=-3	Sope
	3	-10 -	-10 -(-7) = -3	-13-(-10) -13+10=-3
	4	13	-13(-10)=-3	-15-(-10)
1	CY=	-3x-	1:tt	- (3+10
	X	У	odiff diff	5
	-2	5		
	-1	9	4	
	0	12	3	non-linear
	1	14	2	non-linear relation bic
	2	15		the 1st 1 co
	3	15 -	0	are not alt
	4	14	-1	relation bic the 1st diff are not constant
			,	"st and
				V

Given the tables above, what is the equation of each line?