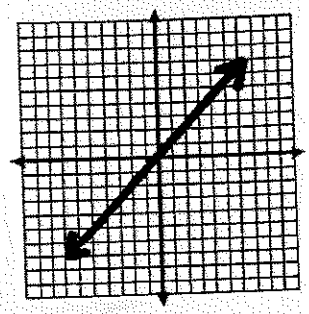
Linear vs. Nonlinear Notes

4/16/15

Linear - the graph of a linear function is **ALWAYS** a single straight line.

* A **linear equation** will have one or two variables and **NO** exponents or other symbols ($|x|$, $\sqrt{}$)

A



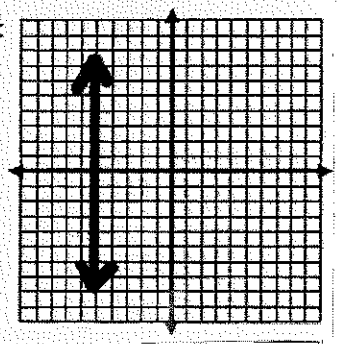
one Straight line

$y = x$

J

No exponents or symbols

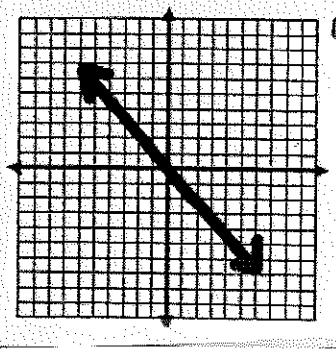
E



$x = -5$

L

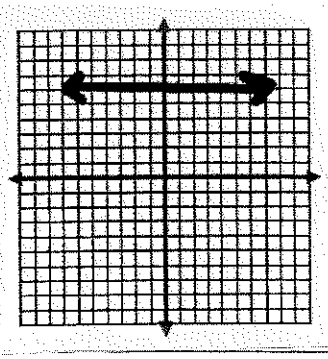
D



$y = -x$

K

G

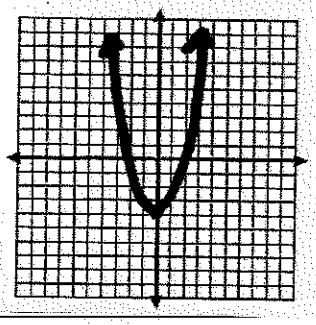


$y = 6$

M

Nonlinear - the graph of a nonlinear function is NEVER a single straight line(curves).

*A nonlinear equation will have one or two variables and include exponents or other symbols ($|x|, \sqrt{\ }$)

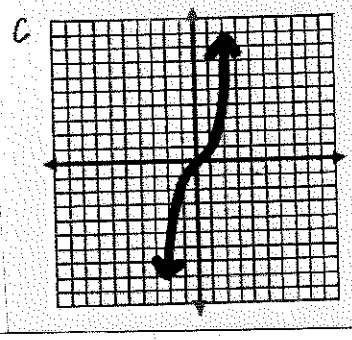


B

Two Curved lines

$y = x^2 - 4$

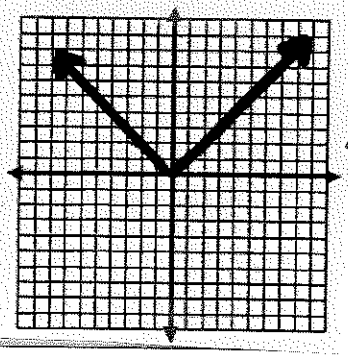
N



C

$y = x^3$

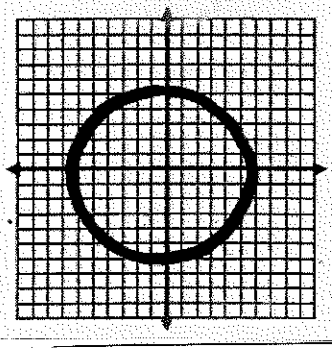
O



Two Straight lines

$y = |x|$

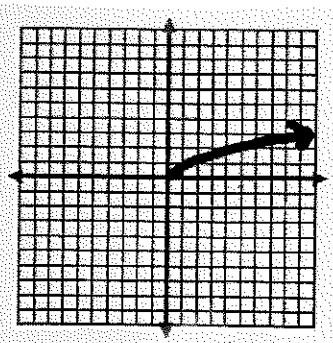
P



F

$x^2 + y^2 = 36$

R



I

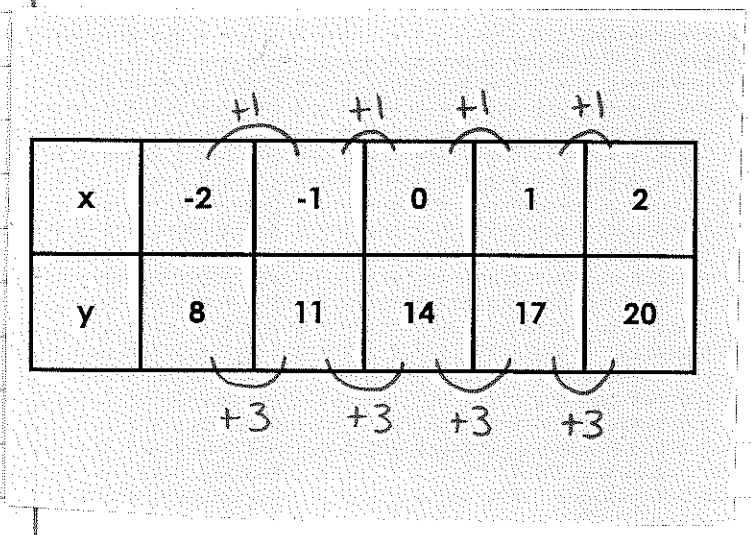
$y = \sqrt{x}$

Q

Table

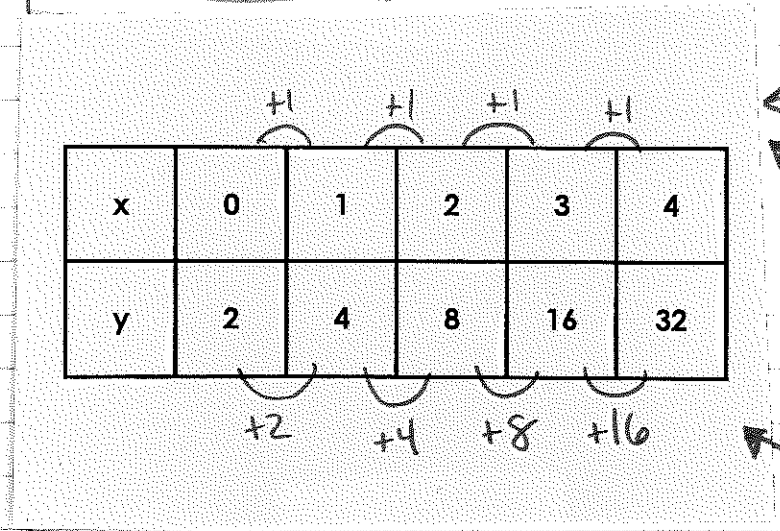
A function is linear if the rate of change is constant between any two sets of points.

Linear



Constant rate of change between input (x) & output (y)

Non linear



Constant

NO Constant rate of change (must be both x & y)

Not Constant