

1.2 Functions

Day 1

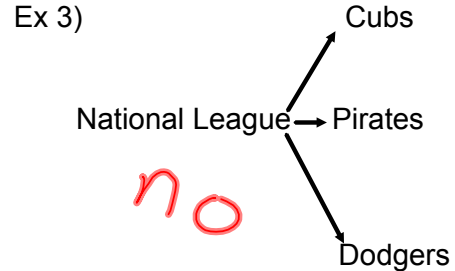
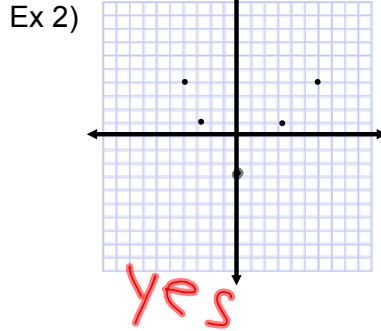
Function: Each value of x is paired exactly with one y. The x variable is the domain or independent variable and the y variable is the range or dependent variable.

I. Function or not??

Ex 1)

x	y
2	11
2	10
3	8
4	5
5	1

no



II. Determine whether the equation represents y as a function of x.

Ex) $y = x^2$ AND x is the independent variable and y is the dependent variable.

Ex 4) $x^2 + y = 1$ YES

$$\frac{-x^2}{y} = \frac{-x^2 + 1}{-x^2 + 1}$$

Ex 5) $-x + y^2 = 1$ NO

$$y = \pm \sqrt{x+1}$$

$$y^2 = x+1$$

III. Function Notation and Evaluating.

$f(x) = x^2 - 4x + 7$

$r(a) = a^2 - 5a - 4$

Ex 6) $g(x) = -x^2 + 4x + 1$

Find $g(2) = -(2)^2 + 4(2) + 1$
 $-4 + 8 + 1 = 5$

$-x^2 - 4x - 4 + 9$
 $-x^2 + 5$

$g(t) = -t^2 + 4t + 1$

$g(x+2) = -(x+2)^2 + 4(x+2) + 1$
 $-(x^2 + 4x + 4) + 4x + 8 + 1$

IV. **Piecewise-Defined Functions:** a function that is defined by two or more equations over a specified domain.

Ex 7) $f(x) = \begin{cases} x^2 + 1, & x < 0 \\ x - 1, & x \geq 0 \end{cases}$ Evaluate if $x = 0, x = -5, x = 7$.

$x = 0: 0 - 1 = -1$

$x = 7: 7 - 1 = 6$

$x = -5: (-5)^2 + 1 = 26$