

BE-1A WEDNESDAY 1-7-09

Simplify:

① $\frac{57}{3}$

② $\frac{621}{9}$

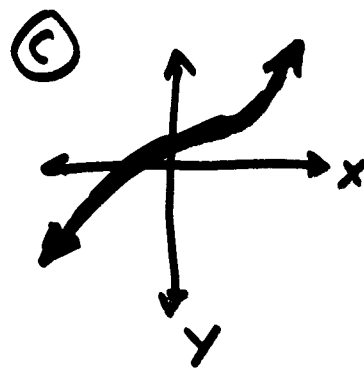
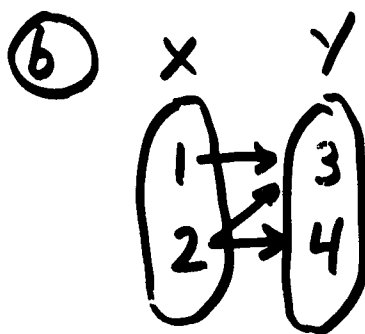
③ $\frac{86}{3}$

④ DEFINE A FUNCTION.

⑤ Identify whether the following ARE functions or NOT, if NOT, WHY?

①

x	y
1	4
2	4
3	4



• Homework Pg. 228-229 # 3-9
Review

BECAUSE "EQUATIONS" ARE THE BASIC
tool of ALGEBRA, AND BECAUSE IT
IS SO IMPORTANT TO KNOW IF THE
RELATION EXPRESSED BY THE EQUATION
IS A FUNCTION, MATHEMATICIANS HAVE
A WAY OF WRITING EQUATIONS TO
SHOW THEY ARE FUNCTIONS, THIS IS
CALLED "FUNCTION NOTATION" AND THIS
WAY OF WRITING[↑] EQUATION HAS OTHER
ADVANTAGES AS YOU WILL SEE SHORTLY.

Function Notation - lets say you have an equation with two variables, x and y , that you know is a function.

$\uparrow$ $\uparrow$
 domain range

For example: $y = 2x + 3$

In function notation you would write this $y = f(x) = 2x + 3$

Read: "y equals a function of x which equals $2x + 3$."

The variable here $f(x)$ is always the independent variable, this is the domain.

Often, the y is left off as "understood" and you see $f(x) = 2x + 3$

Read "f of x equals $2x + 3$ "

Read these expressions:

$$y = f(x) = 3x^2 - 2$$

$$y = f(x) = 2x$$

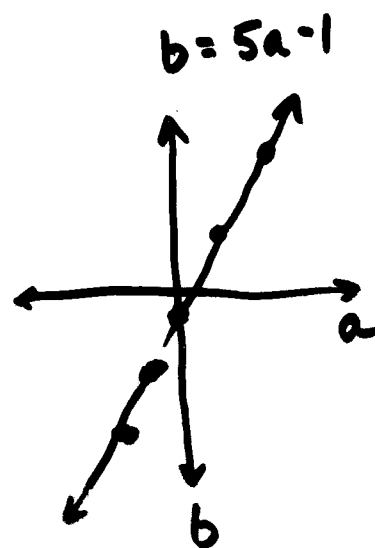
$$f(x) = 3$$

$$b = f(a) = 5a - 1$$

Which is the domain and which is the range in the above equation.

How would you set up the "T-Table" to graph $b = f(a) = 5a - 1$

a	$5a - 1 = b$	(a, b)
-2	$5(-2) - 1 = -11$	$(-2, -11)$
-1	$5(-1) - 1 = -6$	$(-1, -6)$
0	$5(0) - 1 = -1$	$(0, -1)$
1	$5(1) - 1 = 4$	$(1, 4)$
2	$5(2) - 1 = 9$	$(2, 9)$



Another very useful feature of function notation is that it allows you to ask for any (x, y) pair that you get in a T-Table in a very efficient way.

In the function $y = 4x + 2$ for example, if you need to know the (x, y) pair at $x = -2$, all you need to write is $f(-2)$

this means, find y when $x = -2$ using your " f " function which in this case is $y = f(x) = 4x + 2$ TIP LINE UP!!
 $y = f(-2) = 4(-2) + 2 = -6 \therefore (-2, -6)$ is a point on the graph of this function.

EX) $f(x) = 2x + 5$

① Find $f(-2)$

$$f(x) = 2x + 5$$

$$f(-2) = 2(-2) + 5 = 1 \quad \therefore (-2, 1)$$

$$\boxed{f(-2) = 1}$$

is a point on
the graph of
this function.

② Find $f(0)$

$$f(x) = 2x + 5$$

$$f(0) = 2(0) + 5 = 5$$

$$\boxed{f(0) = 5}$$

You can find and use $f(x)$ in calculations.

③ Find $f(1) + 4$

$$f(x) = 2x + 5$$

$$f(1) = 2(1) + 5 = 7$$

$$f(1) + 4 = 7 + 4 = \boxed{11}$$

* THIS is EX. 3 on Pg 227 in Ch 4-6

"f" is just the name of the function,
 if you are dealing with more than
 one function at a time it is
 common to use "g" and "h" as the
 next two names. Here is how it
 works:

Ⓔ $f(x) = x + 6$
 $g(x) = 2x - 5$
 $h(x) = x^2$

find: $f(-1)$, $g(2)$, and $h(4)$

$f(x) = x + 6$	}	$g(x) = 2x - 5$	}	$h(x) = x^2$
$f(-1) = (-1) + 6$		$g(2) = 2(2) - 5$		$h(4) = 4^2$
$f(-1) = 5$		$g(2) = -1$		$h(4) = 16$
POINTS on graph $(-1, 5)$		$(2, -1)$		$(4, 16)$

You can even use variables as the domain in function notation, use parentheses for your substitution!

(EX) $y = f(x) = 3x - 1$

Find $f(2x)$

$$f(x) = 3x - 1$$

$$f(2x) = 3() - 1$$

$$f(2x) = 3(2x) - 1$$

$$\boxed{f(2x) = 6x - 1}$$

THIS means A POINT
ON THE graph is: $(2x, 6x - 1)$
 $\uparrow \quad \quad \uparrow$
 domain range

Homework: Pg 229 # 10-15
Pg 230 # 32-38