

Name: Key

## Following the Rules!

Sometimes, the equations (or rules) that are given in a problem are a little more complicated than  $y = 2x$ . It is important to remember the steps for evaluating equations when we are faced with more difficult rules. We can find points that fit into any equation by following three steps:

Step 1: Substitute a number for  $x$ .

Step 2: Solve for  $y$  according to the order of operations.

Step 3: Record the value you calculated for  $y$  so that you can later graph the rule.

Example: For the equation  $y = 2x^3 + 5x - 26$ , what is  $y$  when  $x = 2$ ? Show all the steps!

$$y = 2(2)^3 + 5(2) - 26$$

$$y = 16 + 10 - 26$$

$$y = 0$$

Example: Now try  $x = -3$  for the same equation.

$$y = 2(-3)^3 + 5(-3) - 26$$

$$y = 2 \cdot -27 + -15 - 26$$

$$y = -54 + -15 - 26$$

$$y = -95$$

Your turn. For the following problems, fill in the table with the appropriate  $x$  and  $y$  points.

1.  $y = \frac{24}{x}$

x	-2	-1	0	1	2
Show your work here	$\frac{24}{-2}$	$\frac{24}{-1}$	$\frac{24}{0}$	$\frac{24}{1}$	$\frac{24}{2}$
y	-12	-24	undefined	24	12

2.  $y = x^3 - 2x^2 + 8$

x	-2	-1	0	1	2
Show your work here	$(-2)^3 - 2(-2)^2 + 8$ $-8 - 2 \cdot 4 + 8$ $-8 - 8 + 8$	$(-1)^3 - 2(-1)^2 + 8$ $-1 - 2 + 8$ $-3 + 8$	$(0)^3 - 2(0)^2 + 8$ $0 + 8$	$(1)^3 - 2(1)^2 + 8$ $1 - 2 + 8$ $-1 + 8$	$(2)^3 - 2(2)^2 + 8$ $8 - 8 + 8$
y	-8	5	8	7	8

3.  $y = 3^x + 2$

x	-2	-1	0	1	2
Show your work here	$3^{-2} + 2$ $\frac{1}{9} + 2$	$3^{-1} + 2$ $\frac{1}{3} + 2$	$3^0 + 2$ $1 + 2$	$3^1 + 2$ $3 + 2$	$3^2 + 2$ $9 + 2$
y	$2\frac{1}{9} = \frac{19}{9}$	$2\frac{1}{3} = \frac{7}{3}$	3	5	11

4.  $y = |x + 2|$

x	-2	-1	0	1	2
Show your work here	$ -2+2 $ $ 0 $	$ -1+2 $ $ 1 $	$ 0+2 $ $ 2 $	$ 1+2 $ $ 3 $	$ 2+2 $ $ 4 $
y	0	1	2	3	4