

Name:

Hour: Date:

Part A: Determining Type of Equation

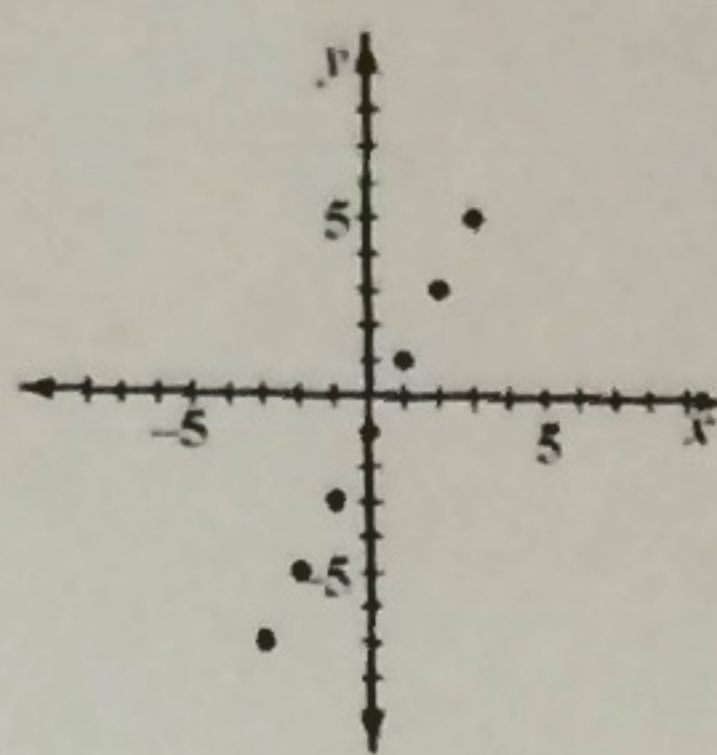
Examples

Based on each table, identify the shape of the graph.

Example 1

x	-3	-2	-1	0	1	2	3
y	-7	-5	-3	-1	1	3	5

SUBTRACT

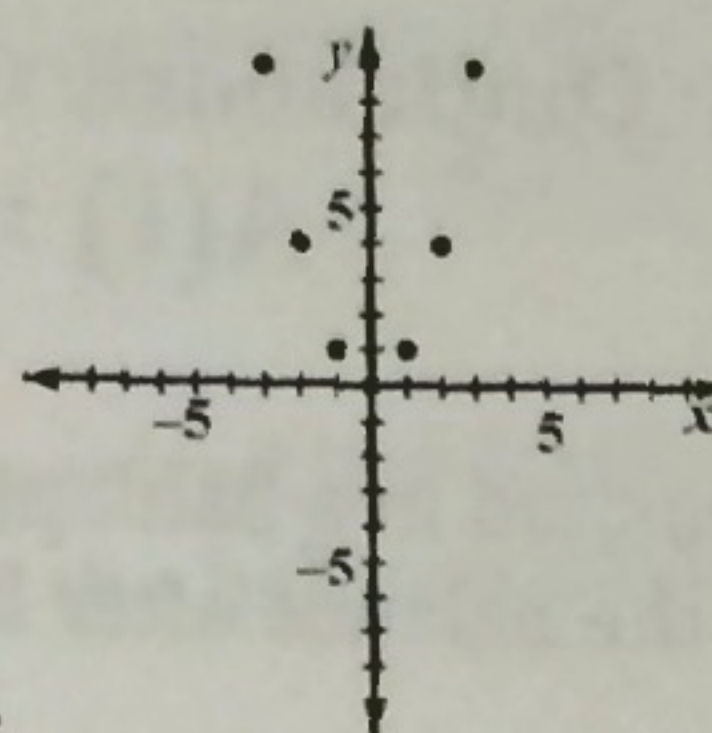


The difference in y-values is always two, a constant.
The graph is linear and is verified at right.

Example 2

x	-3	-2	-1	0	1	2	3
y	9	4	1	0	1	4	9

SUBTRACT
TWICE

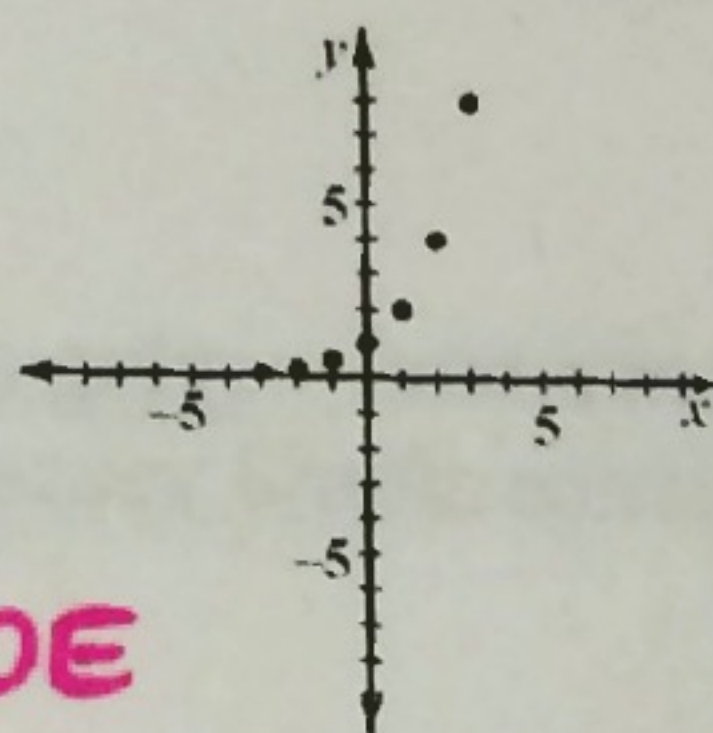


The first difference in y-values is not constant but the second difference is. The graph is quadratic and is verified at right.

Example 3

x	-3	-2	-1	0	1	2	3
y	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8

DIVIDE



The difference in y-values follows a pattern similar to the y-values. The graph is exponential and is verified at right. (In this case, the difference pattern was exactly the same as the y-values. This is not always necessary.)

OR: DIVIDE $\frac{y_2}{y_1}$
→ if same, then
EXPONENTIAL

DIRECTIONS:

- Determine if each of the data sets below are **linear**, **quadratic**, or **exponential**.
- IF EXPONENTIAL:** Use exponential regression to determine the equation.

1.

LINEAR

x	-3	-2	-1	0	1	2	3
y	14	10	6	2	-2	-6	-10

SUBTRACT

-4 -4 -4 -4 -4 -4

3.

QUADRATIC

x	-3	-2	-1	0	1	2	3
y	21	12	5	0	-3	-4	-3

SUBTRACT
TWICE

-9 -7 -5 -3 -1 1

5.

x	-3	-2	-1	0	1	2	3
y	4	8	16	32	64	128	256

DIVIDE

2 2 2 2 2 2

EXPONENTIAL

$$y = 32(2)^x$$

2.

EXPONENTIAL

x	-3	-2	-1	0	1	2	3
y	$\frac{1}{2}$	1	2	4	8	16	32

EQUATION:
 $4(2)^x$

2 2 2 2 2 2 divide

4.

LINEAR

x	-3	-2	-1	0	1	2	3
y	-16	-13	-10	-7	-4	-1	2

SUBTRACT

3 3 3 3 3 3

6.

x	-3	-2	-1	0	1	2	3
y	$\frac{1}{27}$	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9	27

3 3 3 3 3 3 DIVIDE

EXPONENTIAL

$$y = 1(3)^x$$