Name: Key

9.6 Do you know the difference?

Examine the information in each section. Then, label each as linear, exponential or quadratic. Explain how you arrived at that conclusion.

1) Table of values:

a)

x	y
-1	0
0	3
1	8
2	15
3	24

-3 -5 -7 -9 (2nd)

b)

x	y
-1	-3.5
0	-0.5
1	2.5
2	5.5
3	8.5

-3 -3 -3 -3

c)

x	y
-1	5/6
0	5
1	30
2	180
3	1080

5/30 30/180 180/1080

1/6 1/6 1/6

Explanation:

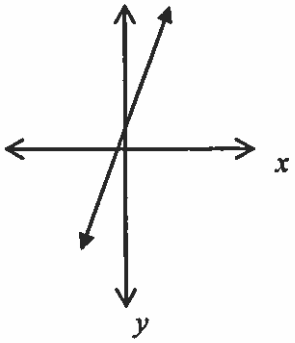
2nd difference so this represents data a quadratic function.

1st difference Linear

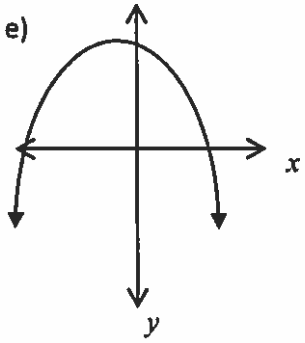
Too big for differences. Same ratios so exponential

2) Sketch of a graph:

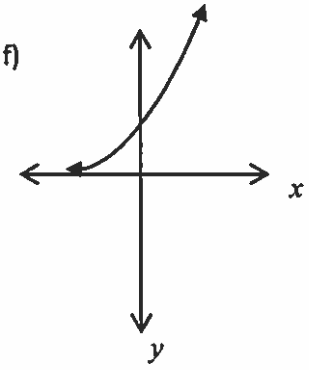
d)



e)



f)



Explanation:

Linear

line

Quadratic

parabola

Exponential (growth)

increases quickly

3) Equation:

g) $3x + 2y = 10$

h) $2y = 3(8.9)^x$

i) $y - 1 = 5x^2 + 10x$

Explanation:

linear

x + y

exponential

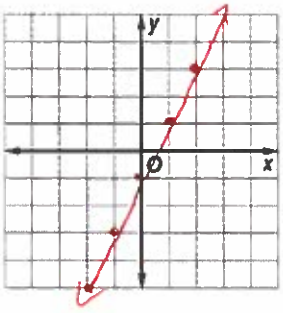
A number raised to a variable exponent

quadratic

largest exponent is squared

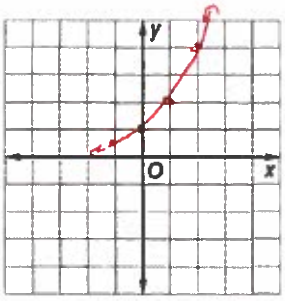
Graph each set of ordered pairs. Determine whether the ordered pairs represent a *linear* function, a *quadratic* function, an *exponential* function or *none of these*.

4. (2, 3), (1, 1), (0, –1), (–1, –3), (–2, –5)



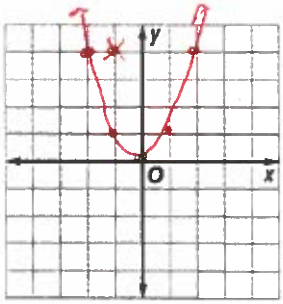
Linear

5. (–1, 0.5), (0, 1), (1, 2), (2, 4)



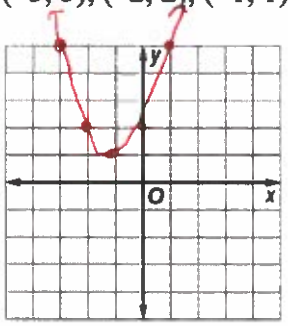
Exponential

6. (–2, 4), (–1, 1), (0, 0), (1, 1), (2, 4)



Quadratic

7. (–3, 5), (–2, 2), (–1, 1), (0, 2), (1, 5)



Quadratic

Look for a pattern in each table of values to determine which model best describes the data.

8.

x	–3	–2	–1	0	1	2
y	32	16	8	4	2	1

÷2 ÷2 ÷2 ÷2 ÷2

NOT Linear

16 8 4 2 1

8 4 2 1

NOT QUAD

32/16 16/8 8/4 4/2

2 2 2 2

Exponential!

9.

x	–1	0	1	2	3
y	7	3	–1	–5	–9

−4 −4 −4 −4

Linear!

10.

x	–3	–2	–1	0	1
y	–27	–12	–3	0	–3

−15 −9 −3 3

Not linear

−15 −9 −3 3

−6 −6 −6

Quadratic!

11.

x	0	1	2	3	4
y	0.5	1.5	4.5	13.5	40.5

×3 ×3 ×3 ×3

Not linear

−1 −3 −9 −27

2 6 18

Not Quadra

.5/1.5 1.5/4.5 4.5/13.5

1/3 1/3

Exponential!

12.

x	–4	–2	0	2	4
y	–16	–8	0	8	16

+8 +8 +8 +8

Linear. Notice