Name KEY

Exponentials Quiz 1 Review Worksheet

1. Be able to identify an exponential function from a table.
2. Be able to write equations for linear and exponential functions from a table.
3. Be able to graph exponential functions and give the domain, range, and asymptote.
4. Be able to calculate the average rate of change.

Tell whether the ordered pairs satisfy an exponential function. Explain your answer.

1.

x	y	
–4	1.5	×2
–3	3	×2
–2	6	×2
–1	12	

Yes; the y-values multiply by 2.

2.

x	y	
1	1	2×2
2	2	2×3
3	6	2×4
4	24	

No; the y-values don't multiply by a constant number.

3.

x	y	
–2	–2	×5
–1	–10	×5
0	–50	×5
1	–250	

Yes; the y-values multiply by 5.

4. {(1, 10), (2, 20), (3, 40), (4, 80)} Yes; the y-values multiply by 2.

5. {(1,5), (2, 10), (3, 15), (4, 20)} No; the y-values increase by 5. This would be linear.

For 6-11,

1. Is it Linear or Exponential?

2. Write the Equation for the Table

6.

x	y	
–4	16	+4
–3	20	+4
–2	24	+4
–1	28	
0	32	

$y = 4x + 32$

7.

x	y	
-2	2/3	×3
-1	2	×3
0	6	×3
1	18	

$y = 6 \cdot 3^x$

8.

x	y	
–2	100	÷10 or $\times \frac{1}{10}$
–1	10	÷10 or $\times \frac{1}{10}$
0	1	÷10 or $\times \frac{1}{10}$
1	1/10	

$y = 1 \cdot \left(\frac{1}{10}\right)^x$ or $y = (0.1)^x$

9.

x	y	
–2	9	+9
–1	18	+9
0	27	+9
1	36	

$y = 9x + 27$

10.

x	y	
0	2	×5.5
1	11	×5.5
2	60.5	×5.5
3	332.75	

$y = 2 \cdot 5.5^x$

11.

x	y	
2	6	+4
3	10	+4
4	14	+4
5	18	

$y = 4x - 2$

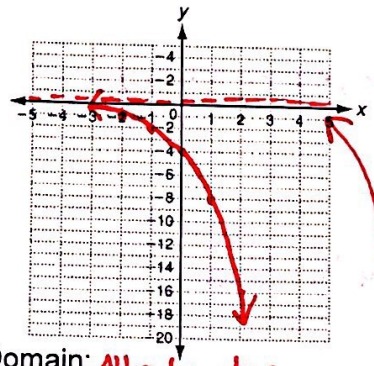
Name_____

Graph the Following Functions.

12. $y = -4(2)^x$

x	y
−2	−1
−1	−2
0	−4
1	−8
2	−16

$-4\cdot2^{-2} = -4\cdot\frac{1}{4} = -1$
$-4\cdot2^{-1} = -4\cdot\frac{1}{2} = -2$
$-4\cdot2^{0} = -4\cdot1 = -4$
$-4\cdot2^{1} = -4\cdot2 = -8$
$-4\cdot2^{2} = -4\cdot4 = -16$



Domain: All real numbers

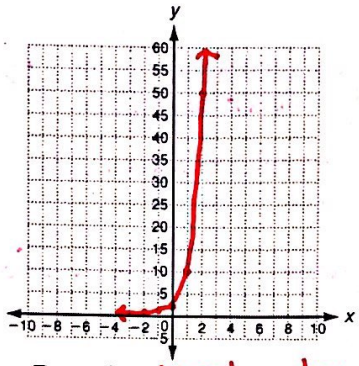
Range: $y<0$

Asymptote: x-axis or $y=0$

13. $y = 2(5)^x$

x	y
−2	2/25
−1	2/5
0	2
1	10
2	50

$2\cdot5^{-2} = 2\cdot\frac{1}{25}$
$2\cdot5^{-1} = 2\cdot\frac{1}{5}$
$2\cdot5^{0} = 2\cdot1$
$2\cdot5^{1} = 2\cdot5$
$2\cdot5^{2} = 2\cdot25$



Domain: All real numbers

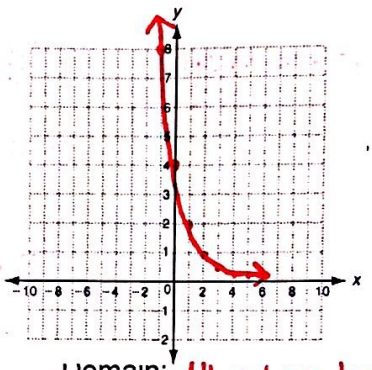
Range: $y>0$

Asymptote: x-axis or $y=0$

14. $y = 4\left(\frac{1}{2}\right)^x$ → $\times\frac{1}{2}$ is same as $\div 2$

x	y
−2	16
−1	8
0	4
1	2
2	1

$\div 2$
$\div 2$
$\div 2$
$\div 2$



Domain: All real numbers

Range: $y>0$

Asymptote: x-axis or $y=0$

Equation	Table	Graph
$f(x) = 4(2)^x$		

Find the average rate of change on the interval $-1 \le x \le 1$

$f(-1) = 4\cdot2^{-1} = 4\cdot\frac{1}{2} = 2$ → $(-1, 2)$

$f(1) = 4\cdot2^{1} = 4\cdot2 = 8$ → $(1, 8)$

$\frac{8-2}{1-(-1)} = \frac{6}{2} = \boxed{3}$

Find the average rate of change on the interval $2 \le x \le 4$

$f(2) = 4\cdot2^{2} = 4\cdot4 = 16$ → $(2, 16)$

$f(4) = 4\cdot2^{4} = 4\cdot16 = 64$ → $(4, 64)$

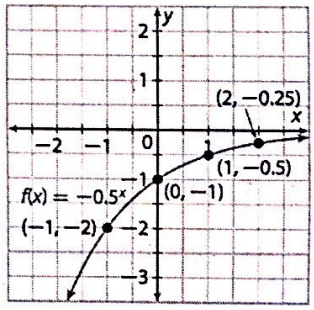
$\frac{64-16}{4-2} = \frac{48}{2} = \boxed{24}$

x	f(x)
0	5
1	10
2	20
3	40
4	80

Find the average rate of change on the interval $0 \le x \le 2$

$+2$ $(0, 5)$ $(2, 20)$ $+15$

$\frac{15}{2} = \boxed{7.5}$



Find the average rate of change on the interval $-1 \le x \le 1$

$(-1, -2)$

$(1, -0.5)$

$\frac{-0.5-(-2)}{1-(-1)} = \frac{1.5}{2} = \frac{3}{4}$ or $\boxed{0.75}$