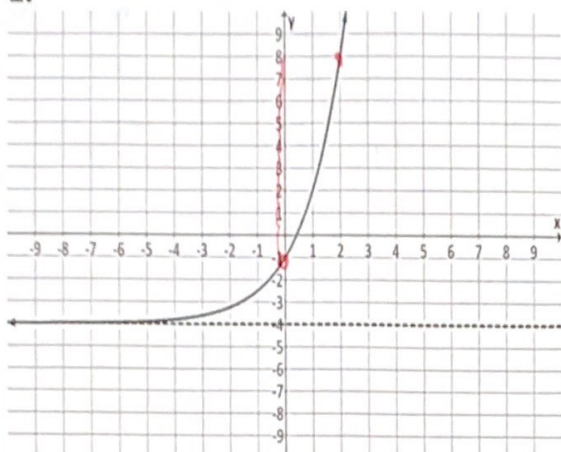


Algebra Exponential Functions

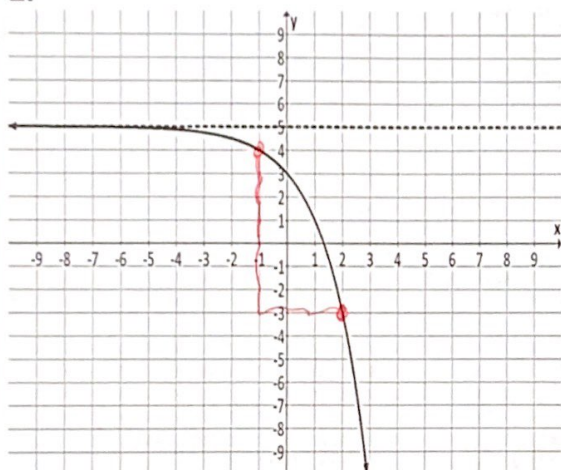
Name: Key

1.



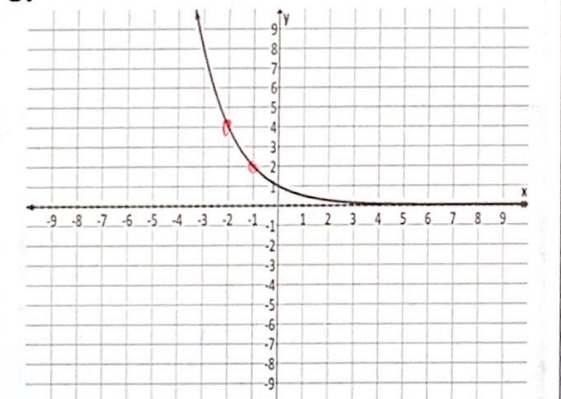
Domain: \mathbb{R} Range: $y > -4$
 X-intercept: $(6, 0)$ y-intercept: $(0, -1)$
 Interval of Increase: \mathbb{R} Interval of Decrease: N/A
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = -4$
 End-Behavior: as $x \rightarrow \infty$, $f(x) \rightarrow \infty$
 as $x \rightarrow -\infty$, $f(x) \rightarrow -4$
 Find the average rate of change from $x=0$ to $x=2$: $\frac{9}{2}$

2.



Domain: \mathbb{R} Range: $y < 5$
 X-intercept: $(1, 0)$ y-intercept: $(0, 3)$
 Interval of Increase: N/A Interval of Decrease: \mathbb{R}
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = 5$
 End-Behavior: as $x \rightarrow \infty$, $f(x) \rightarrow -\infty$
 as $x \rightarrow -\infty$, $f(x) \rightarrow 5$
 Find the average rate of change from $x=-1$ to $x=2$: $-\frac{7}{3}$

3.



Domain: \mathbb{R} Range: $y > 0$
 X-intercept: N/A y-intercept: $(0, 1)$
 Interval of Increase: N/A Interval of Decrease: \mathbb{R}
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = 0$
 End-Behavior: as $x \rightarrow \infty$, $f(x) \rightarrow 0$
 as $x \rightarrow -\infty$, $f(x) \rightarrow \infty$
 Find the average rate of change from $x=-2$ to $x=-1$: $-\frac{3}{4}$

Algebra Exponential Functions

Name: Ken

4. Identify all of the transformations for the functions below. Also list out the location of the asymptote.

a. $f(x) = 4\left(\frac{3}{4}\right)^x$

Stretch 2
Decay $\frac{3}{4}$
 $y=0$

b. $f(x) = 3(1.5)^x - 6$

Stretch 3
Grow 1.5
down 6
 $y=-6$

c. $f(x) = .25(2)^x + 4$

Shrink .25
Growth 2
up 4
 $y=4$

d. $f(x) = -4\left(\frac{5}{4}\right)^{x+3} - 2$

Reflect x
down 2
Stretch 4
Growth $\frac{5}{4}$
left 3
 $y=-2$

e. $f(x) = -\left(\frac{1}{2}\right)^{x-3}$

Reflect x
Decay $\frac{1}{2}$
Right 3
 $y=0$

f. $f(x) = 2^{-x+3} - 8$

Growth 2
left 3
down 8
 $y=-8$

5. Find the average rate of change for the following functions on the given interval.

a. $f(x) = \frac{3}{4}(2)^x, 2 \leq x \leq 5$

x	y
2	3
5	24

$\frac{24-3}{5-2} = \frac{21}{3} = 7$

b. $f(x) = 2(5)^x, 1 \leq x \leq 3$

x	y
1	10
3	250

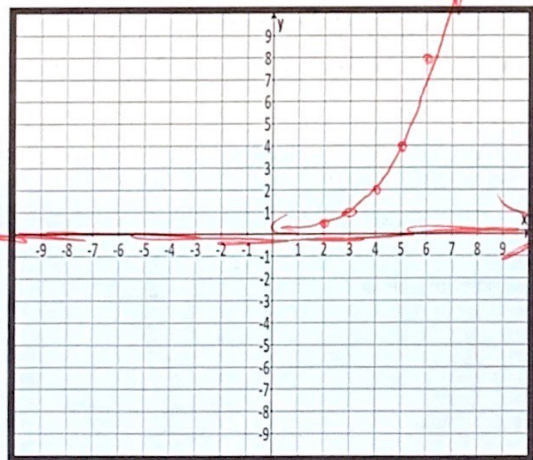
$\frac{240}{2} = 120$

6. Graph the following exponential functions: (Transformations, Table, Graph, Asymptote)

a. $f(x) = 2(2)^{x-4}$

x	y
2	0.5
3	1
4	2
5	4
6	8

Stretch 2
Growth 2
Right 4
 $y=0$



b. $f(x) = -(2)^x + 6$

x	y
-2	5.75
-1	5.5
0	5
1	4
2	2

Reflect
Growth 2
up 6
 $y=6$

