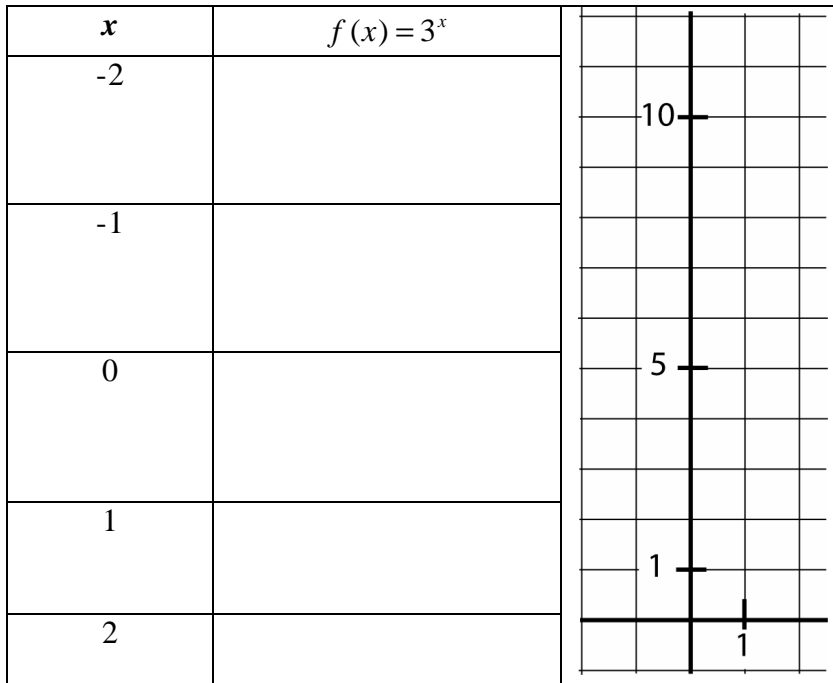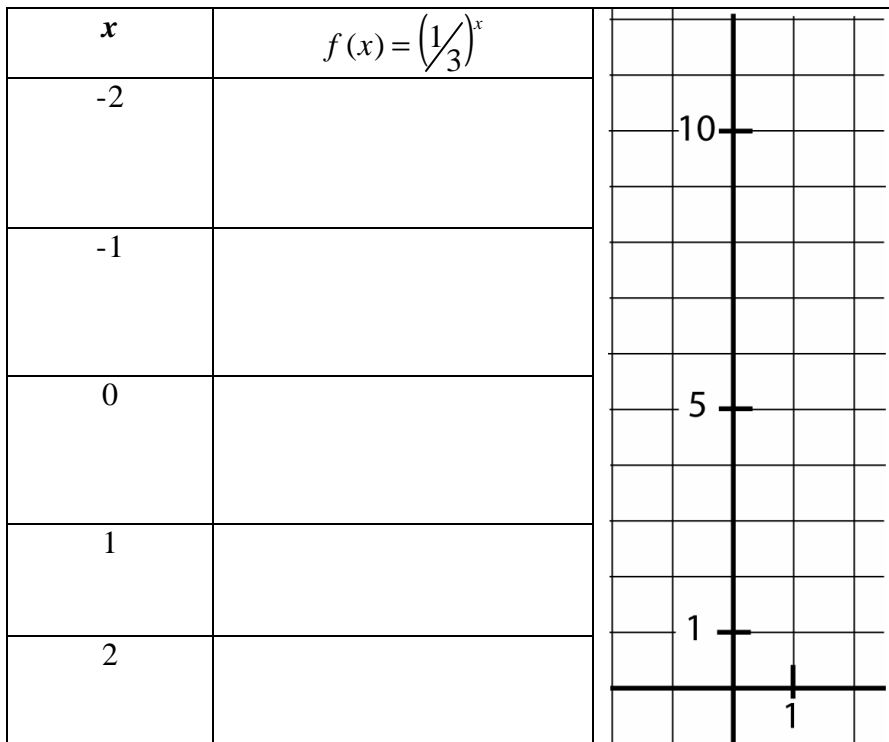Working with exponential functions   NAME:

1. Complete the table. Then plot and connect the points to form a graph of $f(x) = 3^x$.

x	$f(x) = 3^x$
-2	
-1	
0	
1	
2	

10

5

1

1

2. Complete the table. Then plot and connect the points to form a graph of $f(x) = \left(\frac{1}{3}\right)^x$.

x	$f(x) = \left(\frac{1}{3}\right)^x$
-2	
-1	
0	
1	
2	

10

5

1

1

3. Now, the first graph $f(x) = 3^x$ should be increasing over the whole domain. Make sure you can see that. The second graph of $f(x) = \left(\frac{1}{3}\right)^x$ is decreasing over its entire domain. What makes the difference? In other words, what about the formula for each makes it increase or decrease?

4a. Make up an exponential function that will increase over its entire domain. Write it down and then sketch what you think it should look like. Then graph it on your grapher to verify.

4b. Make up an exponential function that will decrease over its entire domain. Write it down and then sketch what you think it should look like. Then graph it on your grapher to verify.

5. Simplify the following using the rules of exponents. Try to simplify them down so that the base (for example, the "5" in part a) occurs only once.

a.) $5^{2x} * 5^3 * 5$

b.) $\dfrac{7^{2x}}{7^3}$

c.) $\dfrac{(-3)^4 * (-3)^x}{-3}$

d.) $\dfrac{5e^x + e^x}{e^{-3}}$

6. Use your calculator to evaluate the following.

a.) $5e^{-6}$

b.) $\dfrac{-8e^2 + 4e}{6}$

7. Let $f(x) = 3e^{2x}$.

a.) Find $f(-2)$.

b.) Find $f(4)$.