Name: _____ Period: _____

Score:

_____ / _____

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HW 4-2 HONORS: Exponential Equations & Vertical Shifts

For each problem you are given a parent function and a second equation that has been shifted vertically.
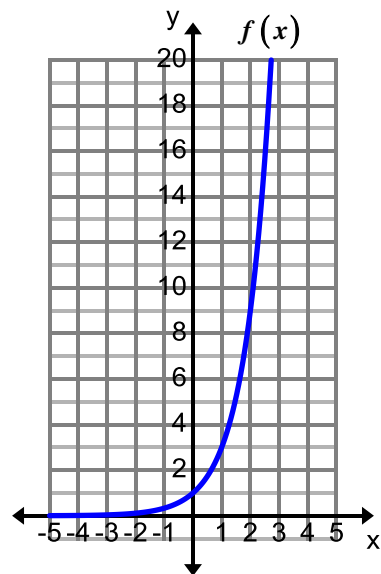
a) Fill in the table for $g(x)$.

b) Given the graph of the parent function $f(x)$, graph $g(x)$ on the same graph. Make sure that you draw in the asymptotes for both $f(x)$ and $g(x)$.

c) Identify the *y*-intercept and asymptote.

$f(x) = 3^x$ and $g(x) = 3^x + 6$

1.

x	Work	$f(x) = 3^x$	$g(x) = 3^x + 6$
-2		$\frac{1}{9}$	
-1		$\frac{1}{3}$	
0		1	
1		3	
2		9	

2. What is the *y*-intercept?
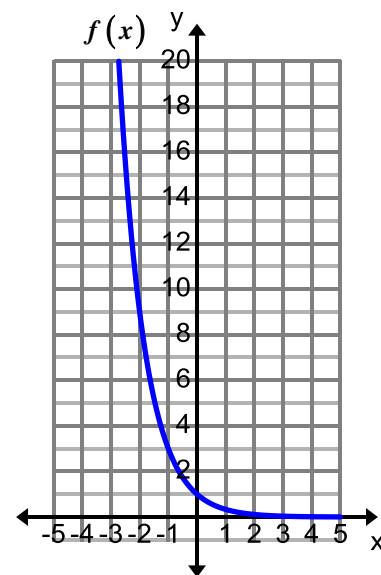
$f(x)$: _____ $g(x)$: _____

3. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

$f(x) = \left(\dfrac{1}{3}\right)^x$ and $g(x) = \left(\dfrac{1}{3}\right)^x + 5$

4.

x	Work	$f(x) = \left(\dfrac{1}{3}\right)^x$	$g(x) = \left(\dfrac{1}{3}\right)^x + 5$
-2		9	
-1		3	
0		1	
1		$\frac{1}{3}$	
2		$\frac{1}{9}$	

5. What is the *y*-intercept?

$f(x)$: _____ $g(x)$: _____

6. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

For each problem you are given a parent function and a second equation that has been shifted vertically.
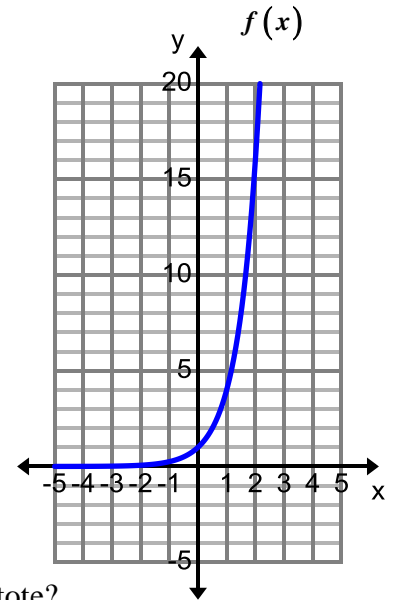a) Fill in the table for $g(x)$.
b) Given the graph of the parent function $f(x)$, graph $g(x)$ on the same graph. Make sure that you draw in
   the asymptotes for both $f(x)$ and $g(x)$.
c) Identify the y-intercept and asymptote.

$f(x)=4^x$ and $g(x)=4^x-3$

7.

x	Work	$f(x)=4^x$	$g(x)=4^x-3$
-2		$\frac{1}{16}$	
-1		$\frac{1}{4}$	
0		1	
1		4	
2		16	

$f(x)$

8. What is the y-intercept?

$f(x)$: _____ $g(x)$: _____

9. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

$f(x)=2(6)^x$ and $g(x)=2(6)^x-3$

10.

x	Work	$f(x)=2(6)^x$	$g(x)=2(6)^x-3$
-2		$\frac{1}{18}$	
-1		$\frac{1}{3}$	
0		2	
1		12	
2		72	

$f(x)$
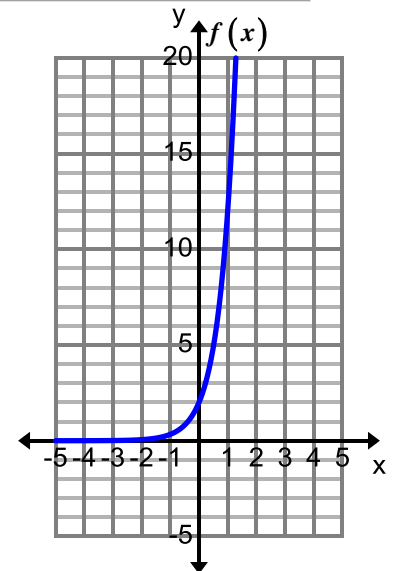
11. What is the y-intercept?

$f(x)$: _____ $g(x)$: _____

12. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

For each problem you are given a parent function and a second equation that has been shifted vertically.
Create a table for both $f(x)$ and $g(x)$ and answer the following questions.

$f(x) = 2^x$ and $g(x) = 2^x + 4$

14. What is the *y*-intercept?

$f(x)$: _____ $g(x)$: _____

15. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

16. Are these functions increasing or decreasing?

17. Are these functions above or below the asymptote?

13.

x	Work	$f(x) = 2^x$	$g(x) = 2^x + 4$
-2			
-1			
0			
1			
2			

$f(x) = \left(\dfrac{1}{2}\right)^x$ and $g(x) = \left(\dfrac{1}{2}\right)^x - 4$

19. What is the *y*-intercept?

$f(x)$: _____ $g(x)$: _____

20. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

21. Are these functions increasing or decreasing?

22. Are these functions above or below the asymptote?

18.

x	Work	$f(x) = \left(\dfrac{1}{2}\right)^x$	$g(x) = \left(\dfrac{1}{2}\right)^x - 4$
-2			
-1			
0			
1			
2			

$f(x) = -(6)^x$ and $g(x) = -(6)^x - 2$

24. What is the *y*-intercept?

$f(x)$: _____ $g(x)$: _____

25. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

26. Are these functions increasing or decreasing?

27. Are these functions above or below the asymptote?

23.

x	Work	$f(x) = -(6)^x$	$g(x) = -(6)^x - 2$
-2			
-1			
0			
1			
2			

For each problem you are given a parent function and a second equation that has been shifted vertically. Create a table for both $f(x)$ and $g(x)$ and answer the following questions.

$f(x) = -3(4)^x$ and $g(x) = -3(4)^x + 5$

29. What is the y-intercept?

$f(x)$: _____ $g(x)$: _____

30. Where is the asymptote?

$f(x)$: _____ $g(x)$: _____

31. Are these functions increasing or decreasing?

32. Are these functions above or below the asymptote?

28.

x	Work	$f(x) = -3(4)^x$	$g(x) = -3(4)^x + 5$
-2			
-1			
0			
1			
2			