Name: __Key__   Date: _____ Period: _____

6.4 Transformations of Exponential & Logarithmic Functions DAY ONE CYU

| CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Describing transformations	1	2, 3	4 – 10
Sketching exponential & logarithmic functions	1	2, 3	4 - 10
Write functions from transformation descriptions		11 - 15	

Describe the transformation of f represented by g. Then sketch each function.

1. $f(x) = 3^x$, $g(x) = 3^x + 5$

↑5u

2. $f(x) = e^x$, $g(x) = e^x + 4$

↑4u

3. $f(x) = e^{-x}$, $g(x) = e^{-x} - 9$

f(x) before -x

↓9u

4. $f(x) = \left(\frac{1}{3}\right)^x$, $g(x) = \left(\frac{1}{3}\right)^{x+2} - \frac{2}{3}$

$h = -2$ $K = -\frac{2}{3}$

←2u   ↓$\frac{2}{3}$u

5. $f(x) = 2^x$, $g(x) = -2^{x-3}$

R_x

→3u

6. $f(x) = 4^x$, $g(x) = 4^{0.5x - 5}$

$a = 0.5$ $h = 5$

HS 2

→5u

7. $f(x) = e^{-x}$, $g(x) = 3e^{-6x}$

$a = 3$
$b = 6$
$HC \frac{1}{6}$
VS 3

8. $f(x) = \left(\frac{1}{2}\right)^x$, $g(x) = 6\left(\frac{1}{2}\right)^{x+5} - 2$

$a = 6$ $h = -5$ $k = -2$
VS 6; ←5u; ↓2u

9. $f(x) = \log_2 x$, $g(x) = \log_2(x+2) - 3$

← 2u; ↓3u

10. $f(x) = \log_{\frac{1}{3}} x$, $g(x) = \log_{\frac{1}{3}}(-x) + 6$

R_y; ↑6u
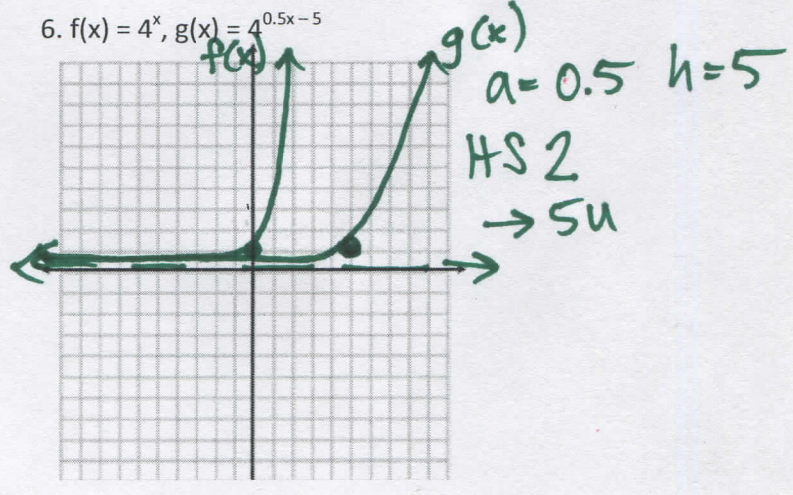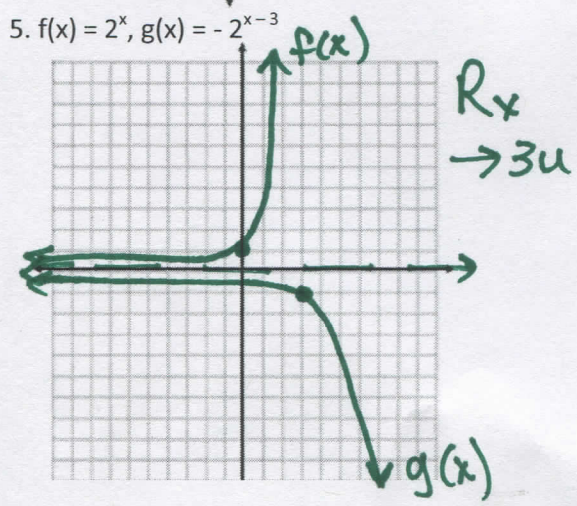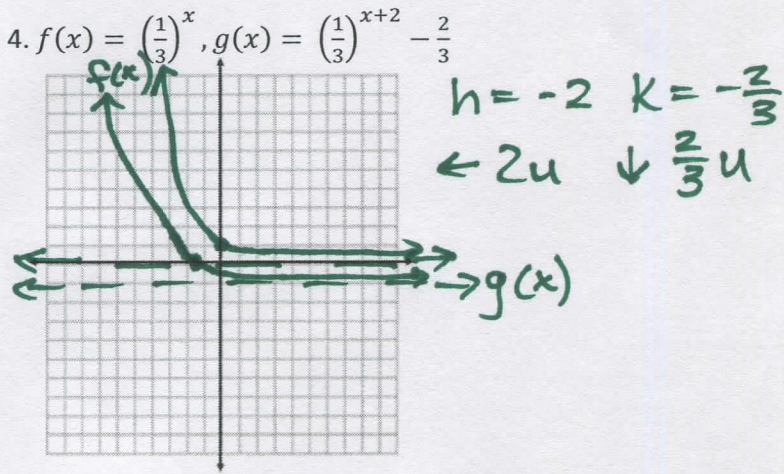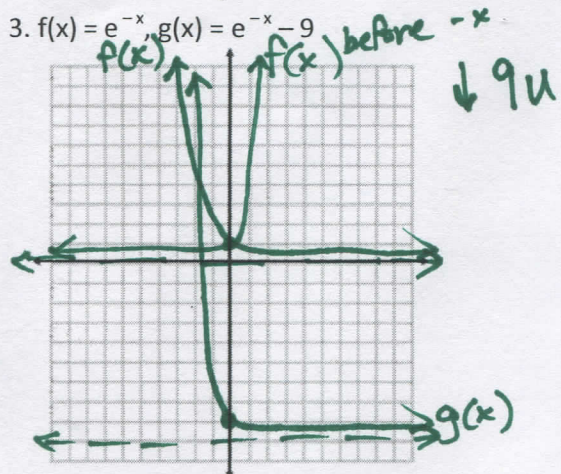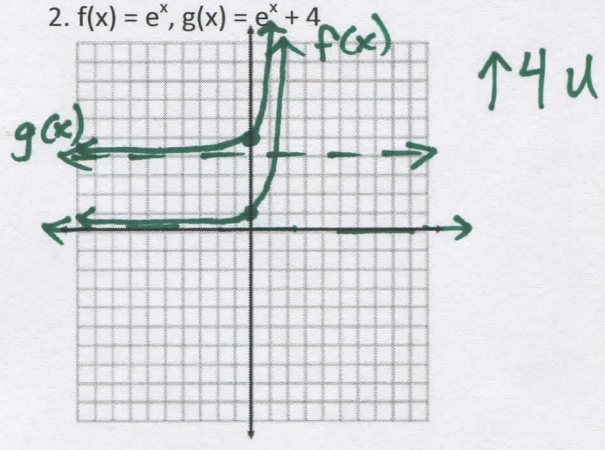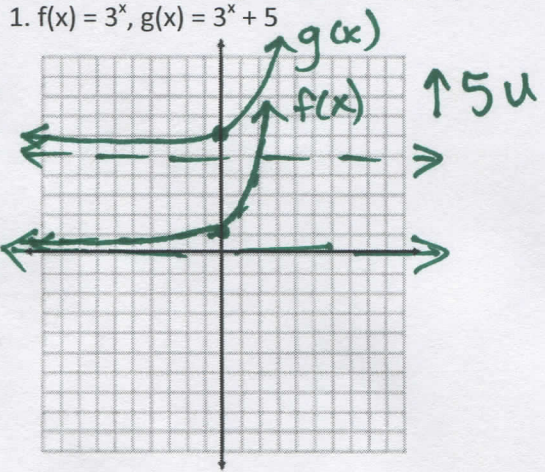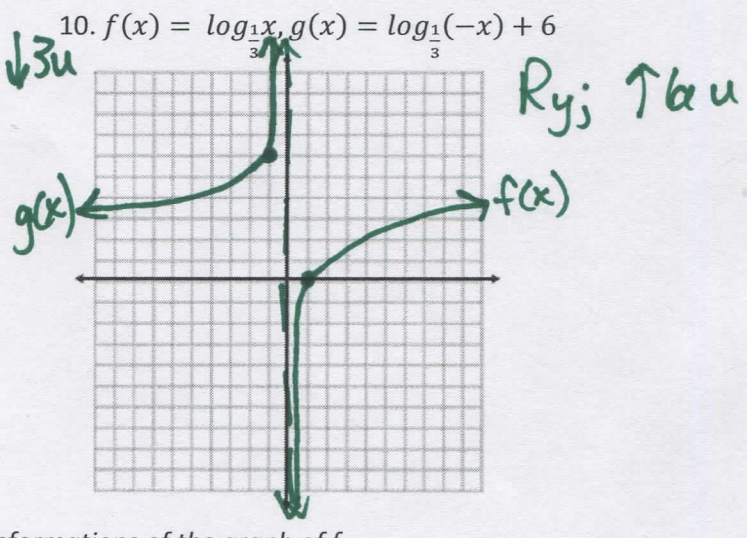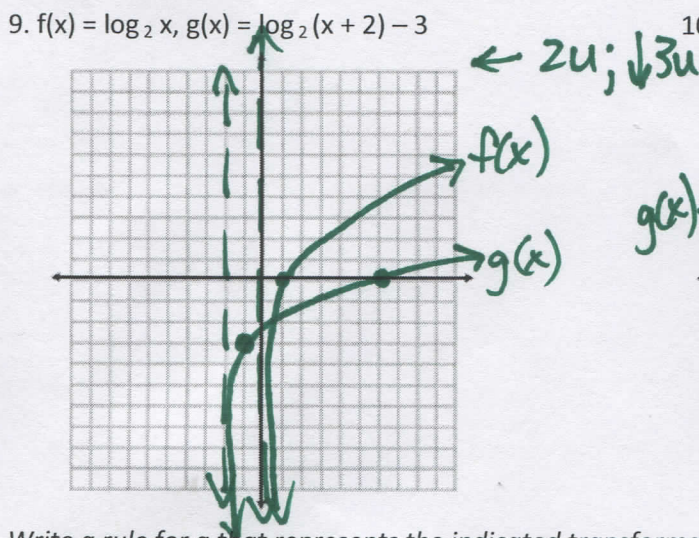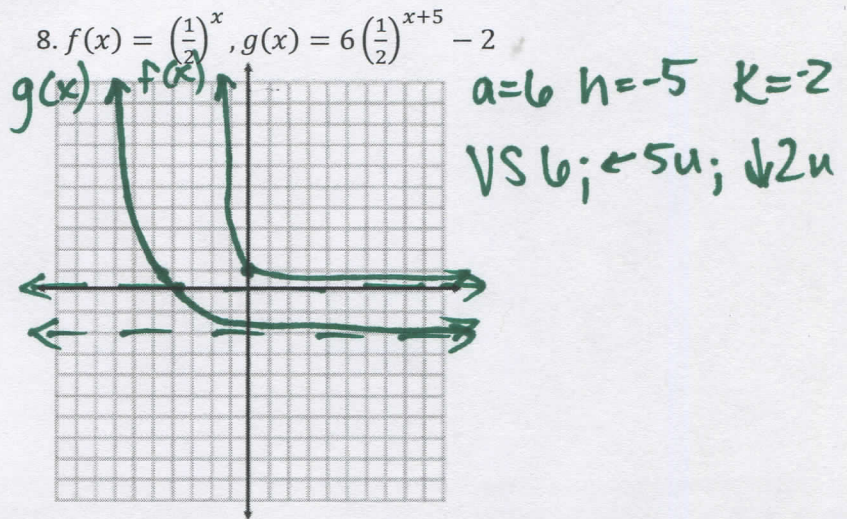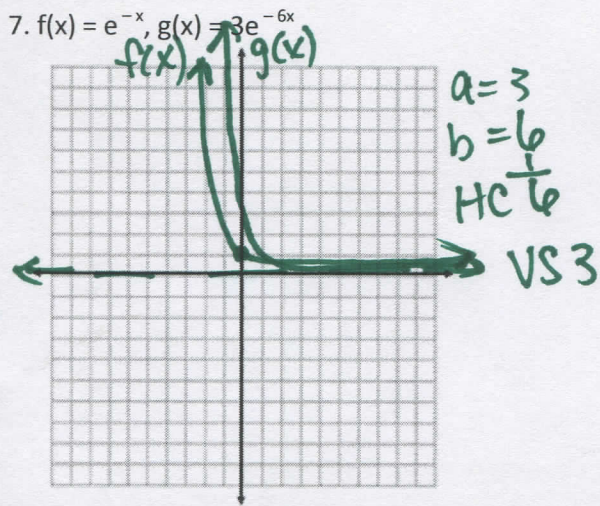
Write a rule for g that represents the indicated transformations of the graph of f.

11. $f(x) = 5^x$; translation 2 units down, followed by a reflection in the y-axis.

$$g(x) = 5^{-x} - 2$$

12. $f(x) = e^x$; horizontal compression by a factor of $\frac{1}{2}$, followed by a translation 5 units up.

$$g(x) = e^{2x} + 5$$

13. $f(x) = \log_6 x$; vertical stretch by a factor of 6, followed by a translation 5 units down.

$$g(x) = 6\log_6 x - 5$$

14. $f(x) = \ln x$; translation 3 units right and 1 unit up, followed by a horizontal stretch by a factor of 8.

$$g(x) = \ln\left(\frac{1}{8}x - 3\right) + 1$$

15. $f(x) = \log_{\frac{1}{2}} x$; translation 3 units left and 2 units up, followed by a reflection in the y-axis.

$$g(x) = \log_{\frac{1}{2}}(-x + 3) + 2$$

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*
Rate your mastery level!
How confident are you with the skills this CYU covered? Circle the score you would give yourself.

1 2	3 4 5	6 7	8
Basic	Intermediate	Advanced	Solved ALL!