

Directions: Sketch the graph of each functions. State the domain, range and asymptote. Describe the graph as a transformation of the parent function.

1. $y = 2 \log_3(x - 5) - 1$

X	Y
$\frac{1}{3}$	$-1 \cdot 2 = -2$
1	$0 \cdot 2 = 0$
3	$1 \cdot 2 = 2$

D: $(5, \infty)$
 R: $(-\infty, \infty)$
 Asymptote: $x = 5$

Stretch by 2
 Right 5, Down 1

2. $f(x) = -\frac{1}{4} \cdot 4^{x-3} + 4$

X	Y
-1	$-.0625$
0	$-.25$
1	-1

D: $(-\infty, \infty)$
 R: $(-\infty, 4)$
 Asymptote: $y = 4$

Reflect over x-axis
 Shrink by $\frac{1}{4}$
 Right 3, Up 4

3. $y = \log_5 x + 6$

X	Y
$\frac{1}{5}$	-1
1	0
5	1

D: $(0, \infty)$
 R: $(-\infty, \infty)$
 Asymptote: $x = 0$

Up 6

4. $y = -3 \log_{10}(x + 4) - 3$

X	Y
$\frac{1}{10}$	$-1 \cdot -3 = 3$
1	$0 \cdot -3 = 0$
10	$1 \cdot -3 = -3$

D: $(-4, \infty)$
 R: $(-\infty, \infty)$
 Asymptote: $x = -4$

Stretch by 3
 Reflects across x-axis
 Left 4, Down 3

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

X	Y
-1	6
0	3
1	1.5

D: $(-\infty, \infty)$
 R: $(-1, \infty)$
 Asymptote: $y = -1$

Stretch by 3
 Left 4, Down 1

6. $f(x) = -1 \cdot 5^{x-5}$

X	Y
-1	$-\frac{1}{5}$
0	-1
1	-5

D: $(-\infty, \infty)$
 R: $(-\infty, 0)$
 Asymptote: $y = 0$

Reflect over x-axis
 Right 5

