vertical Stretch or Shrink (a>1) (a<1)

Growth or DECAY (b>1) (b<1)

Graphing and Characteristics of Exponential Equations

Name _____ Date _____

Transformations: $y = -a(b)^{x-h} + k$

- $-$: Reflects across asymptote
- h: move left or Right (+) (−)
- k: [Asymptote] move up or down (+) (−)

Domain: • How wide graph is.
$(-\infty, \infty)$ / $\mathbb{R}$ / All Real #'s

Range: • How tall graph is. (lowest point, highest point)
a is positive R: (k, ∞)
a is negative R: $(-\infty, k)$

Asymptote: $y = k$
Horizontal line you never cross

X-Int: where graph touches/crosses X-AXIS (#, 0)

Y-Int: where graph crosses y-axis (0, #)

Increasing or Decreasing
Graph is going up → INCreasing
Graph is going down → DECREASING

Interval will always be same as domain [$(-\infty, \infty)$]

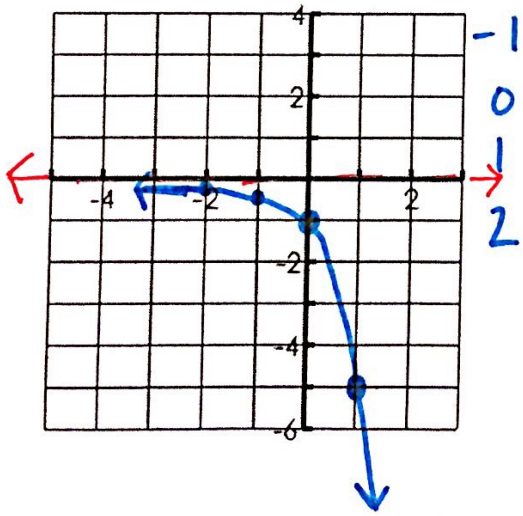
End Behavior:

left
As x → $-\infty$, f(x) → _____
As x → ∞, f(x) → _____
Right

• 1 of these blanks will always be ∞ or $-\infty$ & the other will be your asymptote

1. $y = -5^x$ = Growth

x	y
-2	-.04
-1	-.2
0	-1
1	-5
2	-25



Transformations: _____
• Reflected across the asymptote

State 3 points on Graph: _____

Domain: $(-\infty, \infty)$ Range: $(-\infty, 0)$

Asymptote: $y = 0$

Increasing or Decreasing? $(-\infty, \infty)$

X-intercept: N/A Y-intercept: (0, -1)

End Behavior:
left
As x → $-\infty$, f(x) → 0
As x → ∞, f(x) → $-\infty$
Right