

$y = a \cdot b^x$
 a - initial value
 b - growth/decay

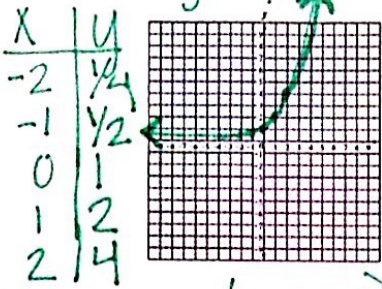
$b > 1 \rightarrow$ growth
 $0 < b < 1 \rightarrow$ decay
 $b \neq 1$
 $b \neq \text{neg}$

Graphing Exponential Function

$0 = 2^x - 5$
 $5 = 2^x \quad \log_2 5 = x$

1. Sketch:

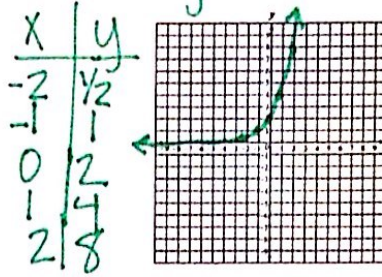
$y = 2^x$



- Domain: $(-\infty, \infty)$
- Range: $(0, \infty)$
- Asymptotes: $y = 0$
- End Behavior:
 $x \rightarrow -\infty, y \rightarrow 0$
 $x \rightarrow \infty, y \rightarrow \infty$
- Y-intercept: $(0, 1)$
- X-intercept: none

2. Sketch:

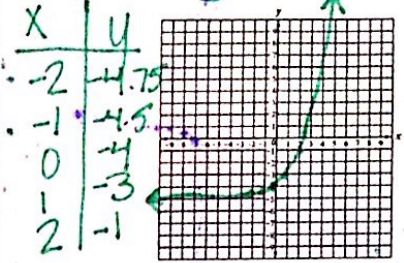
$y = 2^{x+1}$



- Domain: $(-\infty, \infty)$
- Range: $(0, \infty)$
- Asymptotes: $y = 0$
- End Behavior:
 $x \rightarrow -\infty, y \rightarrow 0$
 $x \rightarrow \infty, y \rightarrow \infty$
- Y-intercept: $(0, 2)$
- X-intercept: none

3. Sketch:

$y = 2^x - 5$



- Domain: $(-\infty, \infty)$
- Range: $(-5, \infty)$
- Asymptotes: $y = -5$
- End Behavior:
 $x \rightarrow -\infty, y \rightarrow -5$
 $x \rightarrow \infty, y \rightarrow \infty$
- Y-intercept: $(0, -4)$
- X-intercept: $(2.32, 0)$

Graphing Logarithmic Functions

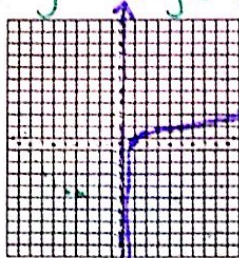
$$y = \log_b x$$

$b \neq 1, b \neq \text{neg}$

1. Sketch:

$$y = \log(x)$$

X	y
-2	err
-1	err
0	err
1	0
2	.301

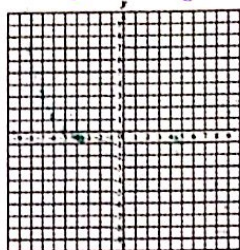


X	y
3	.477
4	.602
5	.699

- Domain: $(0, \infty)$
- Range: $(-\infty, \infty)$
- Asymptotes: $x = 0$
- End Behavior:
 - $x \rightarrow 0, y \rightarrow -\infty$
 - $x \rightarrow \infty, y \rightarrow \infty$
- Y-intercept: none
- X-intercept: $(1, 0)$

2. Sketch:

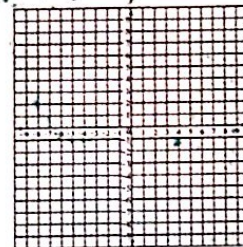
$$y = \log(x) + 1$$



- Domain: _____
- Range: _____
- Asymptotes: _____
- End Behavior:
 - $x \rightarrow \underline{\hspace{2cm}}, y \rightarrow \underline{\hspace{2cm}}$
 - $x \rightarrow \underline{\hspace{2cm}}, y \rightarrow \underline{\hspace{2cm}}$
- Y-intercept: _____
- X-intercept: _____

3. Sketch:

$$y = \log(x-1)$$



- Domain: _____
- Range: _____
- Asymptotes: _____
- End Behavior:
 - $x \rightarrow \underline{\hspace{2cm}}, y \rightarrow \underline{\hspace{2cm}}$
 - $x \rightarrow \underline{\hspace{2cm}}, y \rightarrow \underline{\hspace{2cm}}$
- Y-intercept: _____
- X-intercept: _____