

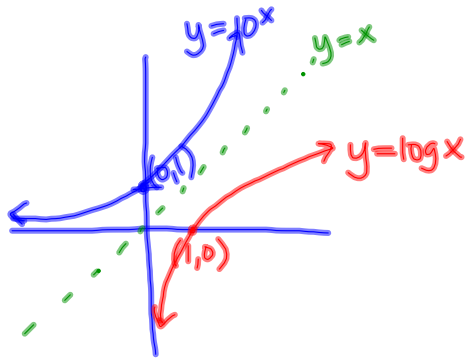
Chp. 7: Logarithms

exponential function

$$y = 10^x$$

x	y
-2	1/100
-1	1/10
0	1
1	10
2	100

y-int



compared to $y = \log_{10} x$
 ← base 10

* $\log 100 = 2$ (100, 2)
 $\log 10 = 1$ (10, 1)

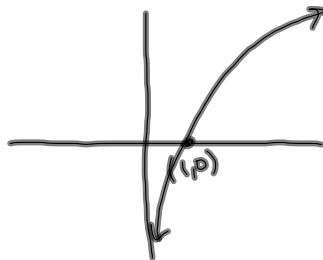
$y = \log x$

x	y
1/100	-2
1/10	-1
1	0
10	1
100	2

x-int.

★ logs are a way to show the inverse of exponential function

$y = 6 \log x$
 ↑
 stretch



Exponential

logs

D: $x \in \mathbb{R}$
 R: $y > 0, y \in \mathbb{R}$

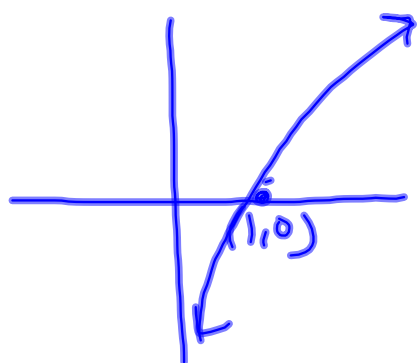
D: $x > 0, x \in \mathbb{R}$
 R: $y \in \mathbb{R}$

Natural logs

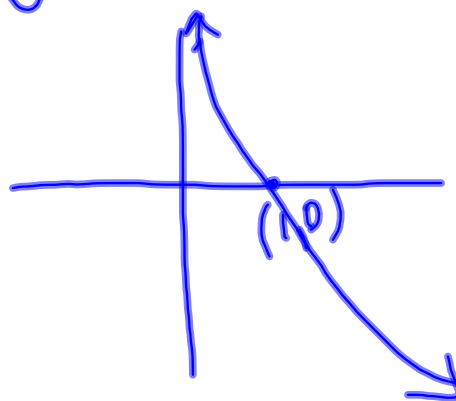
$$y = \ln x \Rightarrow y = \log_e x$$

$$* e \approx 2.718$$

$$y = 8 \ln x$$

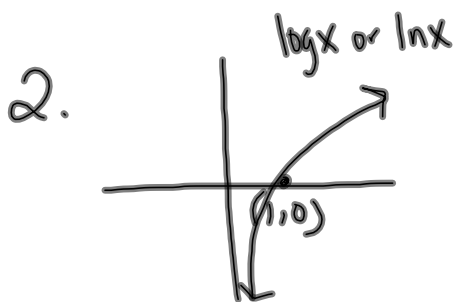


$$y = -8 \ln x$$

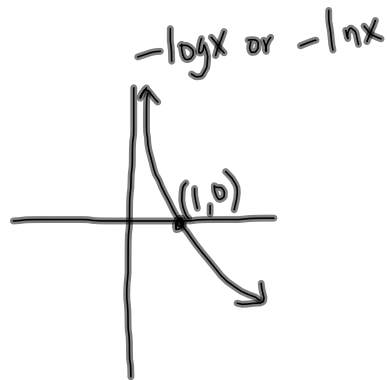


Worksheet

- Exponential Growth
- quadratic
- log
- cubic
- log
- Exp. Decay



x-ints $\Rightarrow (1, 0)$
 y-ints \Rightarrow none
 E.B: Q1 \cup Q4



D: $x > 0, x \in \mathbb{R}$
 R: $y \in \mathbb{R}$

- 3.
- \rightarrow iv
 - \rightarrow i
 - \rightarrow ii
 - \rightarrow iii

Sheet #2

1. a) $\log_4 64 = 3$

$$4^3 = 64$$

exponential
form

b) $\log_{10} 100 = 2$

$$10^2 = 100$$

c) $\log_5 25 = 2$

$$5^2 = 25$$

d) $\log_2 32 = 5$

$$2^5 = 32$$

e) $\ln 0.35 = x$

$$\log_e 0.35 = x$$

$$e^x = 0.35 \quad \text{or} \quad 2.718^x = 0.35$$

✳

calculator

$$\ln 0.35 = x$$

$$x \approx -1.05$$

 \Rightarrow

$$e^{-1.05} \approx 0.35$$