Logarithmic Functions

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions.

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions.
We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions.
We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$
Let's look at the graph of $y = ln(x)$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$
Let's look at the graph of $y = ln(x)$
▸ We can graph $y = ln(x)$ reflecting ▸ the graph of $y = e^x$ across $y = x$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$

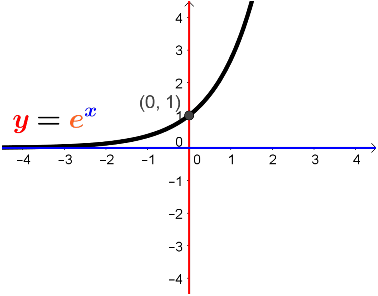
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$

Let's look at the graph of $y = ln(x)$

▸ We can graph $y = ln(x)$ reflecting ▸ the graph of $y = e^x$ across $y = x$



Logarithmic Functions

We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$

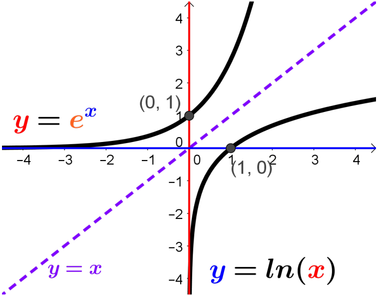
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

The most frequently used is the natural logarithm: $log_e(x) = ln(x)$

Let's look at the graph of $y = ln(x)$

We can graph $y = ln(x)$ reflecting the graph of $y = e^x$ across $y = x$

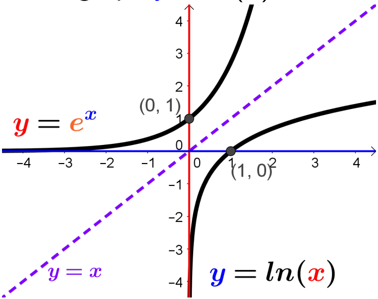


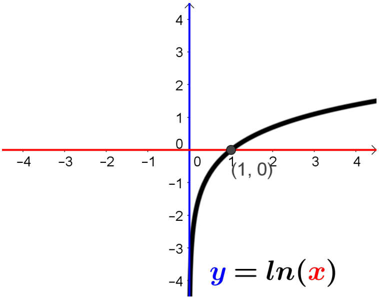
Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions.
We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$
Let's look at the graph of $y = ln(x)$
▸ We can graph $y = ln(x)$ reflecting ▸ the graph of $y = e^x$ across $y = x$



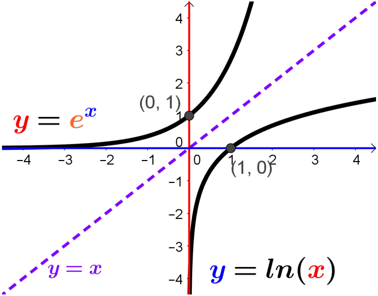


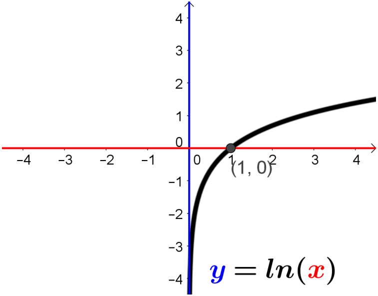
Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$
Let's look at the graph of $y = ln(x)$
▸ We can graph $y = ln(x)$ reflecting ▸ the graph of $y = e^x$ across $y = x$





Notice that the $y-$int at $(0,1)$ reflects to the $x-$int at $(1,0)$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each $base = b$, there is a different logarithm for each $base = b$

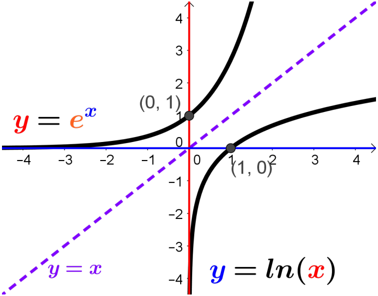
For the function $y = f(x) = b^x$ the Logarithm $base = b$ is:

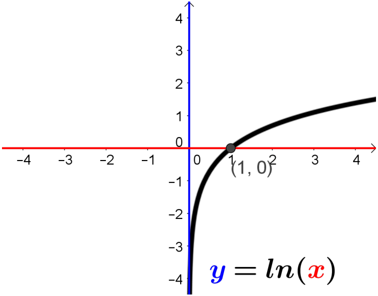
$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$

Let's look at the graph of $y = ln(x)$

▸ We can graph $y = ln(x)$ reflecting ▸ the graph of $y = e^x$ across $y = x$





Notice that the $y-$int at $(0,1)$ reflects to the $x-$int at $(1,0)$

Algebraically, this is because: $1 = e^0 \Leftrightarrow 0 = ln(1)$

Logarithmic Functions

▸ We defined Logarithms as the inverse functions of Exponential Functions. We saw that, since there is a different exponential function for each base $= b$, there is a different logarithm for each base $= b$

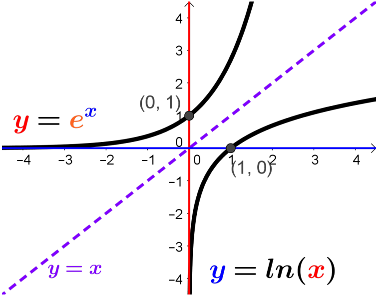
For the function $y = f(x) = b^x$ the Logarithm base $= b$ is:

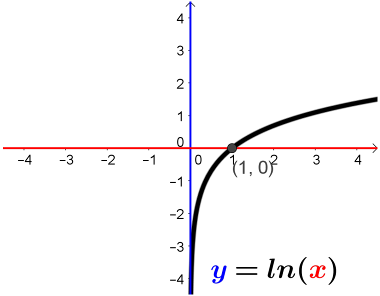
$$f^{-1}(x) = log_b(x)$$

▸ The most frequently used is the natural logarithm: $log_e(x) = ln(x)$

Let's look at the graph of $y = ln(x)$

▸ We can graph $y = ln(x)$ reflecting ▸ the graph of $y = e^x$ across $y = x$





Notice that the $y-$int at $(0,1)$ reflects to the $x-$int at $(1,0)$

Algebraically, this is because: $1 = e^0 \Leftrightarrow 0 = ln(1)$

The horiz. asymptote at $x = 0$ reflects to the vert. asymptote at $y = 0$