***The inverse of an exponential function is a logarithmic function.***

* ***Example:*** Find the inverse of *f*(*x*) = 3*x*
* ***Example:*** Find the inverse of *g*(*x*) = log2 *x*

**Switch x and y values FIRST!**

* ***Example:*** Find the inverse of *f*(*x*) = 3 + log2 *x*
* ***Example:*** Find the inverse of *f*(*x*) = log2 (*x* + 1) – 3

Graphing Logarithmic Functions: ***Find the inverse; graph the inverse of the inverse…***

* ***Example:*** *f*(*x*) = 1 + log4 *x*
* ***Exponential Form:***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- |
| **x** | **Exponential** |
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**Graph Only Logarithmic Table** |

|  |  |
| --- | --- |
| **x** | **Logarithmic** |
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 |  |
| **Determine the following for Logarithmic functions:*** Domain:
* Range:
* Vertical Asymptote:
 | **Find the following for the logarithmic function:** *f*(*x*) = 1 + log4 *x****Domain: \_\_\_\_\_\_\_\_\_\_******Range: \_\_\_\_\_\_\_\_\_\_\_******Asymptote:*** *\_\_\_\_\_\_\_\_\_\_* |  |

Graphing Logarithmic Functions: ***Find the inverse; graph the inverse of the inverse…***

* ***Example:*** Graph $f\left(x\right)= log\_{3}x$
* ***Exponential form:***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- |
| **x** | **Exponential** |
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**Graph Only Logarithmic Table** |

|  |  |
| --- | --- |
| **x** | **Logarithmic** |
|  |  |
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 |  |
| **Determine the following for Logarithmic functions:*** Domain:
* Range:
* Vertical Asymptote:
 | **Find the following for the logarithmic function:** $$f\left(x\right)= log\_{3}x$$***Domain: \_\_\_\_\_\_\_\_\_\_******Range: \_\_\_\_\_\_\_\_\_\_\_******Asymptote:*** *\_\_\_\_\_\_\_\_\_\_* |  |

***Finding x and y intercepts of a logarithmic function algebraically. ~Do NOT switch x and y~***

|  |  |
| --- | --- |
| * ***Example:*** *f*(*x*) = 1 + log4 *x*

*\*First write the logarithmic function in exponential form.\** * ***Exponential form:***
 | * ***Example:*** $f\left(x\right)= log\_{3}x$

*\*First write the logarithmic function in exponential form.\** * ***Exponential form:***
 |
| ***Finding x – intercept:*** (Substitute 0 in for y)  | ***Finding x – intercept:*** (Substitute 0 in for y) |
| ***Finding y – intercept:*** (Substitute 0 in for x)  | ***Finding y – intercept:*** (Substitute 0 in for x) |