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| **Topic 2.10 Inverses of Exponential Functions** | **A logarithmic function is the inverse of** **an exponential function** |
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**Practice Problem 1**

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| The function is given by  Which of the following statements about the inverse of  is true? |
| (A) The inverse of  is given by and is defined for all real values of (B) The inverse of  is given by and is defined for all real values of  (C) The inverse of  is given by and is defined only for  (D) The function does not have an inverse because the function is not invertible. |

**Practice Problem 2**

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| The points  and  are on the graph of the exponential function  given by  where  Which of the following statements about the graph of  is true?(A) The points  and  are both on the graph of  because (B) The points  and  are both on the graph of  because (C) The points  and  are both on the graph of  because (D) The point  is on the graph of  but the point  is not on the graph of  because the domain of  is restricted to  thus the range of  is restricted to  |

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| **Practice Problem 1 Solution:**(C) The inverse of  is given by and is defined only for  The inverse of a general exponential function $f\left(x\right)=b^{x}$ is a logarithmic function of the form $g\left(x\right)=log\_{b}x.$ Since the range of the exponential function is the domain of the logarithmic function is  |
| **Practice Problem 2 Solution:**(B) The points  and  are both on the graph of  because If the function $f\left(x\right)=b^{x}$ consists of input-output pairs of  and  then the inverse function consists of input-output pairs  and  |

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