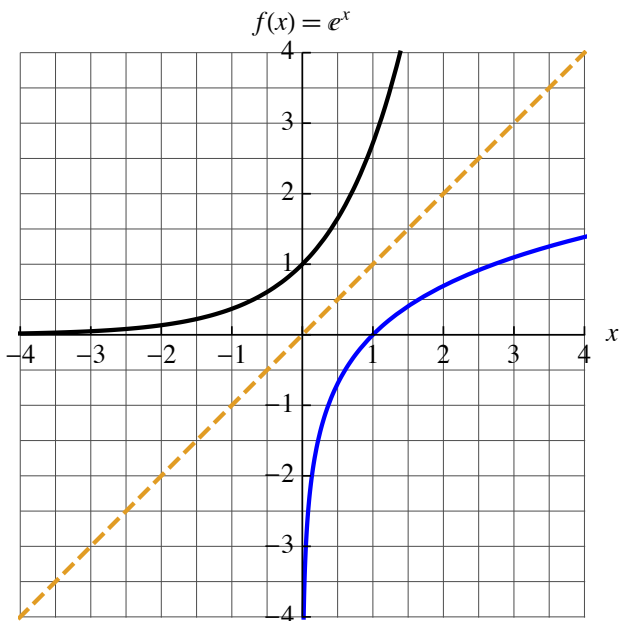


## The Inverse of the Exponential Function

In Grade 11, you spent a fair amount of time investigating exponential functions; that is, functions such as:

$$f(x) = e^x$$

As we reviewed earlier, the inverse of function when graph is the reflection of the original function across the line  $y = x$ . Here is a graph of the exponential function and its inverse:



Because of their importance, the inverse of exponential functions are given their own name: *logarithmic* functions. The inverse of  $f(x) = e^x$  is  $f^{-1}(x) = \ln(x)$ , which is pronounced “ell en of x” or “lawn of x”. So,

$$\ln(e^x) = x \quad \text{and} \quad e^{\ln(x)} = x$$