The Functions $10^x$ and $2^x$

We computed that $\frac{d}{dx} a^x = (\ln a) a^x$.

So

$$\frac{d}{dx} 2^x = (\ln 2) 2^x$$

and

$$\frac{d}{dx} 10^x = (\ln 10) 10^x.$$  

Even if we insist on starting with another base, like 2 or 10, the natural logarithm appears. They come up naturally, independent of our human preferences like base 2 or base 10. The base $e$ may seem strange at first, but it comes up everywhere. After a while you’ll learn to appreciate just how natural it is.