

1.5

1. derivative:

$$\log_2 n = \frac{1}{n \ln(2)}$$

$$\frac{2^n}{2^n} = (e^{2^n \ln(2)}) (2^n \ln(2))$$

$$3n^4 + 5n^3 + 7n^2 + 2n + 4 = 12n^3 + 15n^2 + 14n + 2$$

$$(x+2)^2 = 2(x+2) = 2x+4$$

2.  $\log(x) =$

$$\left( \frac{1}{x \ln(2)} \right)$$

$$2^x = \left( 2^x \ln(2) \right)$$

3. ~~no~~ you can't treat  $e^x$  as  $2^x$  because the derivative of  $e^x$  is itself (just a special property).  $2^x$  is just a different function altogether.

Also  $\log x$  is not the same as  $\ln x$  because the bases are different ( $\log_2 x = \log x$ ,  $\log_e(x) = \ln(x)$ ). Therefore  $\ln x$  is an entirely different function.