

**The natural log function  $\ln x$  GRADED HOMEWORK**

1. Given that  $a = \ln 2$  and  $b = \ln 3$  and  $c = \ln 5$   
find in terms of a and b

- (i)  $\ln 6$       (ii)  $\ln 10$       (iii)  $\ln \frac{1}{2}$       (iv)  $\ln \frac{1}{12}$       (v)  $\ln \sqrt{2}$

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2. Evaluate      (a)  $\ln e^3$       (b)  $\ln 1$       (c)  $\ln \sqrt{e}$

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3. Solve the equations      (a)  $\ln x = 2$       (b)  $\ln x = 100$

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4. Differentiate (a)  $\ln 2x$       (b)  $\ln x^3$       (c)  $\ln \sqrt{x^2 - 1}$

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5. (a) Differentiate  $x \ln x$

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(b) Differentiate  $\frac{\ln x}{x}$

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