

3 Differentiating natural logarithmic functions

Marks

1. If $y = \ln[f(x)]$ what is the expression for $\frac{dy}{dx}$

[5]

2. Differentiate:

[4]

- A. $1 - \log_e 3x$
- B. $\ln(5x^3 + 3x - 9)$
- C. $3x^2 + 5x - 5 + \ln 4x$
- D. $\log_e(2x + 4)(3x - 1)$
- E. $(x^2 + \log_e x)^6$
- F. $\frac{\ln x}{x-2}$
- G. $e^x \ln x$
- H. $\ln \sqrt{2-x}$

3. Find the equation of the tangent to the curve $y = \log_e(x - 1)$ at the point where $x = 2$.

[1]