EXERCISES – Logs & Exponentials

Differentiate the following:

(i) $y = e^{x}$

(ii) $y = e^{6x}$

(iii) $y = e^{-3x}$

(iv) $y = e^{x^2}$

(v) $y = \dfrac{1}{e^{2x}}$

(vi) $y = e^{2x - x^2}$

(vii) $y = 6e^{4x}$

(viii) $y = \dfrac{5}{e^{5x}}$

(ix) $y = x.e^{x}$

(x) $y = x^2.e^{3x}$

(xi) $y = (e^{x} + 4)^3$

(xii) $y = \dfrac{e^{x} + 1}{e^{3x}}$

(xiii) $y = \dfrac{x+1}{e^x}$

(xiv) $y = \ln(5x)$

(xv) $y = \ln(5x^2)$

(xvi) $y = \ln(x + x^2)$

(xvii) $y = x.\ln(4x+1)$

(xviii) $y = x^2.\ln(x)$

(xix) $y = \dfrac{\ln(5x)}{x}$

(xx) $y = e^x.\ln(x)$

(xxi) $y = e^{2x}.\ln(x^2 - 1)$

(i) e^x (ii) $6e^{6x}$ (iii) $-3e^{-3x}$ (iv) $2x.e^{x^2}$ (v) $-2e^{-2x}$ (vi) $(2-2x).e^{2x-x^2}$ (vii) $24e^{4x}$ (viii) $-25e^{-5x}$ (ix) $(x+1).e^x$

(x) $(2x+3x^2).e^{3x}$ (xi) $3e^x(e^x+4)^2$ (xii) $-2e^{-2x}-3e^{-3x}$ (xiii) $-xe^{-x}$ (xiv) x^{-1}

(xv) $\frac{2}{x}$ (xvi) $\frac{1+2x}{x+x^2}$ (xvii) $\ln(4x+1)+\frac{4x}{4x+1}$ (xviii) $2x.\ln(x)+x$ (xix) $\frac{1-\ln(5x)}{x^2}$ (xx) $e^x(\frac{1}{x}+\ln(x))$

(xxi) $2e^{2x}(\ln(x^2-1)+\frac{x}{x^2-1})$ **ANSWERS**