

1. For the following functions find $\frac{dy}{dx}$

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

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

(c) $y = \frac{e^x}{1 - e^x}$

2. For the following functions find $\frac{dy}{dx}$

(a) $y = x \ln x - x$

(b) $y = \ln(x^2 + 1)$

(c) $y = \ln\left(\frac{1+x}{1-x}\right)$

3. Find an expression for $\frac{dy}{dx}$ given the relations

(a) $e^{x-y} = \sin x$

(b) $\ln xy = e^x$

4. For the following functions find $\frac{dy}{dx}$

(a) $y = 2^{x^2}$

(b) $y = \log_3 2x$

(c) $y = x^{\cos x}$