MATH6103 Differential & Integral Calculus

Differentiation Practice Sheet

Find $\frac{dy}{dx}$ when:

a) $y = e^x \ln x$

b) $y = \sin \sqrt{x}$

c) $y = \frac{1}{x^2} \ln x$

d) $y = \sin \frac{1}{x}$

e) $y = \frac{1}{x+1}$

f) $y = \cos 4x^2$

g) $y = \cos(2x + 1)$

h) $y = \sin(x^2 + 3x + 4)$

i) $y = \tan \frac{1}{x}$

j) $y = e^{x^2}$

k) $y = e^{x^2+3x+2}$

l) $y = \frac{x \sin x}{e^x}$

m) $y = x^3 \tan x$

n) $y = \frac{x+2}{x+2}$

o) $y = \sec^2 x$

p) $y = \exp(\exp(x))$

q) $y = \ln(x^7 + 4x)$

r) $y = x^4 e^{2x}$

s) $y = \ln(\ln x)$

t) $y = \sin x \ln x \cos x$

u) $y = \tan e^x$

v) $y = \sqrt{e^{x+3}}$

w) $y = \frac{1}{e^x}$

x) $y = \frac{x}{e^x \sin x}$

y) $y = \ln \sqrt{x}$

z) $y = 3^\pi$