MATHS 104 Assigament

Integrate the following function

1) $\sin^6 x$

$$\frac{dy}{dx}(\sin x^6)$$

Hassan Ramatu
Suleiman. 19/
mhs01/183. MBBS

Use differentiation rules

$$\frac{d}{dg}(\sin g \times \frac{dy}{dx} x^6)$$

Calculate the derivatives

$\cos(g) \times 6x^5$

Substitute back

$\cos(x^6) \times 6x^5$

Reorder the terms

$6x^5 \times \cos x^6$

1

2

2) $\cos^4 x \sin^3 x$

$\frac{dy}{dx} \cos x^4 \sin x^3$

Use differentiation rules

$\frac{dy}{dx} \cos x^4 \times \sin x^3 + \cos x^4 \times \frac{dy}{dx} \sin x^3$

Calculate the derivatives

$-\sin x^4 \times 4x^3 \times \sin x^3 + \cos x^4 \cos x^3 \times 3x^2$

simplify the expression

$-4x^3 \times \sin x^4 \sin x^3 + 3x^2 \times \cos x^4 \cos x^3$

3) $\cos x \sin^3 x$

$\frac{dy}{dx}(\cos x \sin x^3)$

Use differentiation rules

$\frac{dy}{dx}(\cos x \times \sin x^3 + \cos x \times \frac{dy}{dx} \sin x^3)$

Calculate the derivatives

$-\sin x \sin x^3 + \cos x \cos x^3 \times 3x^$

Reorder the terms

$-\sin x \sin x^3 + 3x^2 \times \cos x \cos x^3$

2