

St. Andrew's and St. Bride's High School
Advanced Higher Homework 11

1. Find the following indefinite integrals, in terms of x , simplifying your answers as far as possible:

(a) $\int 9x^5(3x^6 - 7)^4 dx$ using $u = 3x^6 - 7$

(b) $\int x^2 e^{4x^3} dx$ using $u = 4x^3$

(c) $\int \sin^3 x \cos x dx$ using $u = \sin x$

(d) $\int \frac{\sec^2 x}{\tan x} dx$

2. Evaluate:

(a) $\int_0^1 \frac{12x}{(2x^2 + 1)^4} dx$ using $u = 2x^2 + 1$

(b) $\int_0^{\frac{\pi}{2}} \sin x \cos^3 x dx$