

1. Integrate the following trigonometric functions.

a)  $\int \sin^3 x \cos^4 x \, dx$

b)  $\int \sin^2(2x) \cos^3(2x) \, dx$

c)  $\int \sin^5 x \cos^7 x \, dx$

d)  $\int \sin^2 x \, dx$

e)  $\int \cos^4 x \, dx$

f)  $\int \sin^4 x \cos^4 x \, dx$

g)  $\int \tan x \, dx$

h)  $\int \tan^2 x \, dx$

i)  $\int \tan^3 x \, dx$

j)  $\int \sec^4 x \tan^3 x \, dx$

k)  $\int \sec^3 x \tan^3 x \, dx$

l)  $\int \sec x \, dx$

m)  $\int \sec^2 x \, dx$

n)  $\int \sec^3 x \, dx$

2. Do an appropriate substitution and evaluate the integral.

a)  $\int \frac{\sqrt{x^2 - 4}}{x^4} \, dx$

b)  $\int \frac{x^3 \, dx}{\sqrt{x^2 + 4}}$

c)  $\int \frac{x^2 \, dx}{\sqrt{16 - x^2}}$

d)  $\int \frac{x^2 \, dx}{\sqrt{9 - 25x^2}}$

e)  $\int \frac{dx}{\sqrt{4x^2 + 9}}$

f)  $\int \frac{dx}{\sqrt{x^2 + 6x + 13}}$

g)  $\int x^2 \sqrt{3 + 2x - x^2} \, dx$