

Problem Set 9

1) For each of the following trigonometric identities, identify when it is appropriate to use. What are some indicators to use these techniques?

(a) Pythagorean Theorem.

(b) Double Angle Identity

(c) Angle Sum Identity

2) Practice! Compute the following integrals and detailing your process:

(a) $\int \sin^2 4x \cos^3 4x \, dx.$

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

(c) $\int \sin^3 x \cos^3 x \, dx.$

(d) $\int \sin^4 x \cos^4 x \, dx.$

(e) $\int_{\pi/3}^{\pi/2} \frac{\sin^2 x}{\sqrt{1 - \cos x}} \, dx.$

(f) $\int \sin 3x \cos 2x \, dx.$

(g) $\int \sin 3x \sin 2x \, dx.$

(h) $\int \cos 3x \cos 2x \, dx.$

(i) $\int x \cos^3 x \, dx.$

(j) $\int \sec^2 x \tan x \, dx.$

(k) $\int \sec x \tan^2 x \, dx.$

(l) $\int \sec^3 x \tan^3 x \, dx.$

(m) $\int \cot^6 2x \, dx.$