MA114 Summer II 2017
Worksheet 3 – Trig Integrals
6/13/17

1. Compute the following integrals.

a) $\displaystyle\int_0^{\pi/2} \cos^3(x)\ dx,$

b) $\displaystyle\int \sin^5(x)\cos^2(x)\ dx,$

c) $\displaystyle\int \tan^6(x)\sec^4(x)\ dx,$

d) $\displaystyle\int \frac{\sin(x)}{\cos^3(x)}\ dx,$

e) $\displaystyle\int_0^{\pi} \cos^2(x)\ dx,$

f) $\displaystyle\int \sqrt{\cos x}\sin^3(x)\ dx,$

g) $\displaystyle\int_0^{2\pi} \sin^2(\tfrac{1}{3}\theta)\ d\theta.$

2. Evaluate $\int \sin x \cos x\ dx$ by four methods:

a) the substitution $u = \cos x$

b) the substitution $u = \sin x$

c) the identity $\sin 2x = 2\sin x \cos x$

d) integration by parts.

Explain the different appearances of the answers. How are they related?