

Math 102 — Integration by substitution

Summary. Try each of the following problems together in a small group.

Problem 1. Find the following antiderivatives using u -substitution. Begin by identifying u and compute $du = u'(x) dx$.

a. $\int e^{-4x} dx$

b. $\int \sin(2x) dx$

c. $\int x^2 e^{x^3+1} dx$

d. $\int x(x^2 + 3)^2 dx$

e. $\int \frac{\sin \theta}{\cos \theta + 5} d\theta$

f. $\int \tan \theta d\theta$