

Math 102 — Substitution with definite integrals

Problem. Find the following definite integrals using substitution. Make sure to change the limits of integration.

a. $\int_0^2 \sqrt{5x+2} \, dx$

b. $\int_0^1 (8x+2)(2x^2+x)^4 \, dx$

c. $\int_0^\pi \cos\left(\frac{x}{2} + \pi\right) \, dx$

d. $\int_0^{\pi/2} e^{-\cos \theta} \sin \theta \, d\theta$

e. $\int_1^4 \frac{e^{x^{1/3}}}{x^{2/3}} \, dx$