

Calculus 1 Solved problems—Integrals

1. Evaluate the integral

a) $\int (x - 2)(x^2 + \sqrt{x}) dx,$

b) $\int_1^4 \frac{dx}{\sqrt{x}},$

c) $\int 2 \sin^2\left(\frac{x}{2}\right) dx,$

d) $\int_{-1}^1 e^{2x+2} dx,$

e) $\int x \cos(2x) dx,$

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

g) $\int_0^1 x^2 e^{x/2} dx,$

h) $\int \frac{3x^2 + 13}{x^3 + 13x} + \frac{2}{x^3 - x} dx,$

i) $\int \frac{2x^5 - 2x^4 + 10x^3 + 7x^2 + 2x - 5}{x^4 - 2x^3 + 5x^2} dx,$

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

k) $\int \frac{dx}{x - 2\sqrt{x-1}},$

l) $\int_0^{\pi/2} \frac{\cos(x)}{\sin^2(x) + 2\sin(x) + 2} dx,$

m) $\int \frac{x^2 dx}{\sqrt{4-x^2}}.$