

MATH 1710 Tutorial 1

In Problems 1–10, evaluate the integral.

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

2. $\int \frac{1}{2x + 3} dx$

3. $\int \sin 3x \cos 3x dx$

4. $\int \frac{e^{2x}}{e^{2x} + 4} dx$

5. $\int_0^2 |1 - x| dx$

6. $\int x^2 \sqrt{3 + 4x^3} dx$

7. $\int x \sqrt{4 - 3x} dx$

8. $\int \frac{x}{3x + 5} dx$

9. $\int_{-3}^2 \frac{1}{x + 2} dx$

10. $\int \sqrt{x^2 + x^4} dx$

Answers: 1. $(x^2 + 3)^4/8 + C$ 2. $(1/2) \ln |2x + 3| + C$ 3. $(1/6) \sin^2 3x + C$

4. $(1/2) \ln(e^{2x} + 4) + C$ 5. 1 6. $(1/18)(3 + 4x^3)^{3/2} + C$

7. $(2/45)(4 - 3x)^{5/2} - (8/27)(4 - 3x)^{3/2} + C$ 8. $x/3 - (5/9) \ln |3x + 5| + C$

9. Does not exist 10. $(1/3)(1 + x^2)^{3/2} + C$ if $x \geq 0$; $-(1/3)(1 + x^2)^{3/2} + C$ if $x < 0$