

6.14 Practice

For each integral, determine what technique would be useful to solve them. (For additional practice, solve the integral.)

1. $\int \frac{a^3 - 1}{a^2 + 1} da$

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

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

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

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

6. $\int_0^1 t(t - 1)^{10} dt$

7. $\int x(x - 1)(x - 2) dx$

8. $\int_1^3 r\sqrt{r^2 - 1} dr$

9. $\int_e^{e^2} \frac{1}{x \ln x} dx$

10. $\int_0^{\pi/6} \frac{\cos \theta - \cos^3 \theta}{\sin^2 \theta} d\theta$

11. $\int_{-2}^2 x^3 \sin(x^2 + 1) dx$

12. $\int \frac{1}{\sqrt{u}e^{\sqrt{u}}} du$

13. $\int \frac{1}{\sqrt{1 - x - x^2}} dx$

14. $\int \frac{2^{\sin \theta}}{\sec \theta} d\theta$

15. $\int_{-2}^2 (x + x^2 + x^7 + \sin x) dx$