

Integration Practice

1. $\int \frac{e^x}{e^x + 9} dx$

2. $\int \frac{x + 23}{(x + 9)(x - 5)} dx$

3. $\int 3\theta \sec^2 \theta d\theta$

4. $\int 19x e^{3x} dx$

5. $\int \sin^6 x \cos^3 x dx$

6. $\int \sin^3 3x \cos^2 3x dx$

7. $\int \sec^2 x \tan x dx$

8. $\int_0^{\frac{3}{2}} \frac{x^3}{\sqrt{9 - x^2}} dx$

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

10. $\int x \ln x dx$

11. $\int t^2 \cos(4 - t^3) dt$

12. $\int_{-1}^1 \frac{e^{5 \arctan y}}{1 + y^2} dy$

13. $\int \frac{1}{x^2 \sqrt{x^2 - 36}} dx$

Answer Section

1. ANS:

$$\ln(e^x + 9) + C$$

2. ANS:

$$\ln\left(\left|\frac{(x-5)^2}{(x+9)}\right|\right) + C$$

3. ANS:

$$3\theta \cdot \tan(\theta) - 3\ln(|\sec(\theta)|) + C$$

4. ANS:

$$\frac{19x \cdot e^{3x}}{3} - \frac{19e^{3x}}{9} + C$$

5. ANS:

$$\frac{(\sin(x))^7}{7} - \frac{(\sin(x))^9}{9} + C$$

6. ANS:

$$\frac{1}{15} \cdot (\cos(3x))^5 - \frac{1}{9} \cdot (\cos(3x))^3 + C$$

7. ANS:

$$\frac{1}{2} \cdot (\sec(x))^2 + C$$

8. ANS:

$$18 - \frac{81\sqrt{3}}{8}$$

9. ANS:

$$\frac{x^2}{2} - 3x + 9\ln(|x+3|) + C$$

10. ANS:

$$\frac{1}{2} \cdot x^2 \cdot \ln(x) - \frac{1}{4} \cdot x^2 + C$$

11. ANS:

$$-\frac{1}{3} \cdot \sin(4 - t^3) + C$$

12. ANS:

$$\frac{1}{5} \cdot e^{\frac{5\pi}{4}} - \frac{1}{5} \cdot e^{-\frac{5\pi}{4}}$$

13. ANS:

$$\frac{1}{36} \cdot \frac{\sqrt{x^2 - 36}}{x} + C$$