

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

2.  $\int \frac{1}{x^2(2+x^3)^{5/3}} dx$

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

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

5.  $\int \frac{dx}{(x+2)^3 \sqrt{x^2+2x-2}}$

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

7.  $\int \tan^3 x \sec^4 x dx$

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

9.  $\int \tan^2 u \sec u du$

$$10. \int \sec^4 x dx$$

$$11. \int \frac{x+1}{\sqrt{4+x^2}} dx$$

$$12. \int \sqrt{\frac{x}{x+1}} dx$$

$$13. \int \sqrt{9+x^2} dx$$

$$14. \int \frac{dx}{\sqrt{x^2-7}}$$

$$15. \int \frac{\sqrt{x}}{(1+\sqrt[3]{x})^2} dx$$

$$16. \int \frac{dx}{\sqrt{5-x^2}}$$

$$17. \int \frac{dx}{x\sqrt{x^2+9}}$$

$$18. \int 2x \cosh(3x) dx$$

$$19. \int x^{1/3}(1+x^{-2/3})^{1/4} dx$$

$$20. \int e^{2x} \sinh(5x) dx$$

$$21. \int \frac{dx}{(2 + \cos x)(3 + \cos x)}$$

$$22. \int \frac{2 \sin x + 3 \cos x}{4 \sin x - 2 \cos x} dx$$

23. Prove the following reduction formulas.

$$(a) \int \tan^n x dx = \frac{\tan^{n-1} x}{n-1} - \int \tan^{n-2} x dx.$$

$$(b) \int \frac{dx}{(a^2 + x^2)^n} = \frac{x}{2a^2(n-1)(a^2 + x^2)^{n-1}} + \frac{2n-3}{2a^2(n-1)} \int \frac{dx}{(a^2 + x^2)^{n-1}} \quad n \neq 1.$$

$$24. \int \csc^3 x dx$$

$$25. \int \frac{x + \sqrt[4]{x-4}}{x - \sqrt{x-4}} dx$$

$$26. \int \cos^2 x \sin 2x dx$$

$$27. \int \frac{\sqrt[3]{\frac{x+3}{x-3}} + 1}{(\sqrt[3]{\frac{x+3}{x-3}} - 1)(x-3)} dx$$

$$28. \int \cos \theta \cos^5(\sin \theta) d\theta$$

$$29. \int \frac{8x + 5}{\sqrt{10 - 4x + 4x^2}} dx$$

$$30. \int \cot^5 \theta \sin^4 \theta d\theta$$

$$31. \int \frac{dx}{(x - 2)\sqrt{x^2 - 4x + 3}} dx$$