Integration

Evaluate the following definite integrals.

1. $\displaystyle\int_{1}^{2}\left(x^2+1\right)dx$

2. $\displaystyle\int_{-1}^{1}\left(x^{\frac{1}{3}}+1\right)dx$

3. $\displaystyle\int_{-2}^{0}\frac{1}{\left(2x-1\right)^2}dx$

4. $\displaystyle\int_{-6}^{2}\sqrt{3-x}\,dx$

5. $\displaystyle\int_{1}^{\sqrt{5}}\sqrt{\left(2t-1\right)^3}\,dt$

6. $\displaystyle\int_{2}^{\sqrt{5}}x\sqrt{x^2-1}\,dx$

7. $\displaystyle\int_{1}^{2}\frac{x}{x^2+2}dx$

8. $\displaystyle\int_{2}^{3}\left(x-\frac{1}{x}\right)^2dx$

9. $\displaystyle\int_{-1}^{1}\left(x+\frac{1}{2}\right)\sqrt{x^2+x+1}\,dx$

10. $\displaystyle\int_{0}^{3}\frac{dx}{x^2+9}$

11. $\displaystyle\int_{1}^{2}\ln x\,dx$

12. $\displaystyle\int_{0}^{2}\left(e^{\frac{x}{2}}-e^{-\frac{x}{2}}\right)dx$

13. $\displaystyle\int_{0}^{\pi/4}\frac{\cos\theta+\sin\theta}{\cos 2\theta+1}d\theta$

14. $\displaystyle\int_{0}^{\pi/6}\cos^3\theta\,d\theta$

15. $\displaystyle\int_{\pi/6}^{\pi/4}\cos^2\theta\cdot\cot^2\theta\,d\theta$

16. $\displaystyle\int_{0}^{\pi/4}\cos^4 t\,dt$

17. $\displaystyle\int_{0}^{\pi/3}\cos^2\theta\sin\theta\,d\theta$

18. $\displaystyle\int_{0}^{\pi/4}\left(1+\cos^2\theta\right)\tan^2\theta\,d\theta$

19. $\displaystyle\int_{0}^{\pi/4}\frac{\sec\theta}{\sin\theta+\cos\theta}d\theta$

20. $\displaystyle\int_{-1}^{5}\left|x-3\right|dx$

21. $\displaystyle\int_{1/8}^{1}\frac{\left(x^{1/3}+2\right)^2}{x^{2/3}}\,dx$

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

23. $\displaystyle\int_{2}^{3}\frac{3x^2-2x+1}{\left(x-1\right)\left(x^2+1\right)}\,dx$

24. $\displaystyle\int_{0}^{\pi/4}\frac{\sin x-1}{\cos^2 x}\,dx$

25. $\displaystyle\int_{0}^{\pi/4}\frac{1}{1+\sin x}$

26. $\displaystyle\int_{0}^{1}\frac{3x}{\sqrt{4-3x}}\,dx$