EXERCISE 7.3

Find the integrals of the functions in Exercises 1 to 22:

1. $\sin^2(2x+5)$ **2.** $\sin 3x \cos 4x$ **3.** $\cos 2x \cos 4x \cos 6x$

4. $\sin^3(2x+1)$ **5.** $\sin^3 x \cos^3 x$ **6.** $\sin x \sin 2x \sin 3x$

7. $\sin 4x \sin 8x$ **8.** $\dfrac{1-\cos x}{1+\cos x}$ **9.** $\dfrac{\cos x}{1+\cos x}$

10. $\sin^4 x$ **11.** $\cos^4 2x$ **12.** $\dfrac{\sin^2 x}{1+\cos x}$

13. $\dfrac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha}$ **14.** $\dfrac{\cos x - \sin x}{1+\sin 2x}$ **15.** $\tan^3 2x \sec 2x$

16. $\tan^4 x$ **17.** $\dfrac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x}$ **18.** $\dfrac{\cos 2x + 2\sin^2 x}{\cos^2 x}$

19. $\dfrac{1}{\sin x \cos^3 x}$ **20.** $\dfrac{\cos 2x}{(\cos x + \sin x)^2}$ **21.** $\sin^{-1}(\cos x)$

22. $\dfrac{1}{\cos(x-a)\cos(x-b)}$

Choose the correct answer in Exercises 23 and 24.

23. $\int \dfrac{\sin^2 x - \cos^2 x}{\sin^2 x \cos^2 x}\, dx$ is equal to

(A) $\tan x + \cot x + C$ (B) $\tan x + \operatorname{cosec} x + C$

(C) $-\tan x + \cot x + C$ (D) $\tan x + \sec x + C$

24. $\int \dfrac{e^x(1+x)}{\cos^2(e^x x)}\, dx$ equals

(A) $-\cot(ex^x) + C$ (B) $\tan(xe^x) + C$

(C) $\tan(e^x) + C$ (D) $\cot(e^x) + C$

7.4 Integrals of Some Particular Functions

In this section, we mention below some important formulae of integrals and apply them for integrating many other related standard integrals:

(1) $\displaystyle\int \frac{dx}{x^2 - a^2} = \frac{1}{2a} \log \left| \frac{x-a}{x+a} \right| + C$