

Evaluate each integral

$$1. \int \frac{1}{x^4} dx \rightarrow \int x^{-4} dx \quad -\frac{1}{3} x^{-3} + C$$

$$2. \int \frac{5}{\sqrt{x}} dx \rightarrow \int 5x^{-1/2} dx \quad 10x^{1/2} + C$$

$$3. \int \frac{x^5 + 7}{x^2} dx \rightarrow \int (x^3 + 7)x^{-2} dx \rightarrow \int x^3 + 7x^{-2} dx \quad \frac{1}{4} x^4 - 7x^{-1} + C$$

$$4. \int (5x^4 - 3x^2 + 2x + 6) dx \quad x^5 - x^3 + x^2 + 6x + C$$

$$5. \int (3x^{-3} - 2x^{-2} + x^4 + 16x^7) dx \quad -\frac{3}{2} x^{-2} + 2x^{-1} + \frac{1}{5} x^5 + 2x^8 + C$$

$$6. \int (1+x^2)(x-2) dx \rightarrow \int x - 2 + x^3 - 2x^2 dx \quad \frac{1}{4} x^4 - \frac{2}{3} x^3 + \frac{1}{2} x^2 - 2x + C$$

$$7. \int x^{1/3} (2+x) dx \rightarrow \int 2x^{1/3} + x^{4/3} dx \quad \frac{3}{2} x^{4/3} + \frac{3}{7} x^{7/3} + C$$

$$8. \int \frac{(x^3+x)^2 dx}{(x^3+x)(x^3+x)} \rightarrow \int x^6 + 2x^4 + x^2 dx \quad \frac{1}{7} x^7 + \frac{2}{5} x^5 + \frac{1}{3} x^3 + C$$

$$9. \int \frac{x^6 - 2x^4 + 1}{x^2} dx \rightarrow \int (x^4 - 2x^2 + 1)x^{-2} dx \rightarrow \int x^4 - 2x^2 + x^{-2} dx \quad \frac{1}{5} x^5 - \frac{2}{3} x^3 - x^{-1} + C$$

$$10. \int x(x-1)^3 dx \rightarrow \int x(x^3 - 3x^2 + 3x - 1) dx \rightarrow \int x^4 - 3x^3 + 3x^2 - x dx \quad \frac{1}{5} x^5 - \frac{3}{4} x^4 + x^3 - \frac{1}{2} x^2 + C$$

$$11. \int (\cos x - 5 \sin x) dx \quad \sin x + 5 \cos x + C$$

$$12. \int \sec x (\sec x + \tan x) dx \rightarrow \int \sec^2 x + \sec x \tan x dx \quad \tan x + \sec x + C$$

$$13. \int (\sec^2 x + x) dx \quad \tan x + \frac{1}{2} x^2 + C$$

$$14. \int \frac{\sin x}{\cos^2 x} dx \rightarrow \int \tan x \sec x dx \quad \sec x + C$$

$$15. \int \frac{\cos^3 x + 4}{\cos^2 x} dx \rightarrow \int \cos x + 4 \sec^2 x dx \quad \sin x + 4 \tan x + C$$

$$16. \int \frac{\sin x}{1 - \sin^2 x} dx \rightarrow \int \frac{\sin x}{\cos^2 x} dx \rightarrow \int \tan x \sec x dx \quad \sec x + C$$