

Find the following indefinite integrals.

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

2. $\int \frac{\sin^2 2x}{7} dx$

3. $\int \frac{x}{\sqrt{x+4}} dx$

$$4. \int \frac{5t^2 - t - 1}{2 - t} dx$$

$$5. \int \frac{2x^3 - x^2 + 4x^{3/4} - x^{-1/2} + 1}{\sqrt[4]{x}} dx$$

6. $\int \frac{1}{1 - \cos \theta} d\theta$

7. $\int (1 - x^4)^3 dx$

8. $\int \frac{2x^2 + 3x - 20}{2x - 5} dx$

9. $\int \csc 4\theta \cot 4\theta d\theta$

10. $\int (y + 1)\sqrt{1 - y} dy$

11. $\int \frac{\tan^2 4x}{\sec^3 4x} dx$

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

Evaluate the following definite integrals.

1. $\int_0^{\pi/3} x \sec x^2 \tan x^2 dx$

2. $\int_3^{10} (4x^3 - x) \sqrt{2x^4 - x^2 + 5} dx$

$$3. \int_{\pi/6}^{\pi/4} \cot^3 x \csc^2 x dx$$

$$4. \int_{\pi/6}^{\pi/4} (\sec^2 x) dx$$

$$5. \int_1^{\pi} \left(3 - \frac{1}{2\sqrt{x}} + \tan 2x \right) dx$$

$$6. \int_{-\pi/2}^{\pi/2} \sin x \cos^2 x dx$$