

AP Calculus BC Chapter 8 (8.1 - 8.5)**Short Answer**

1. Find the indefinite integral $\int 3x \cos 8\pi x^2 dx$.

2. Find the indefinite integral $\int \frac{1}{\sqrt{8-10x-x^2}} dx$.

3. Solve the differential equation $(25 + \tan^2 x)y' = \sec^2 x$.

4. Find the indefinite integral.

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

5. Find the indefinite integral.

$$\int \frac{8x^2}{e^x} dx$$

6. Find the indefinite integral.

$$\int \frac{s}{\sqrt{1+5s}} ds$$

7. Find the definite integral.

$$\int_0^{\pi/5} x \cos 5x dx$$

8. Find the indefinite integral.

$$\int \sin^3 4x \cos^4 4x dx$$

9. Find the indefinite integral.

$$\int \frac{\cos^3 3\theta}{\sqrt{\sin 3\theta}} d\theta$$

10. Find the indefinite integral.

$$\int \sec^5 3x \tan 3x dx$$

11. Evaluate $\int_0^{\frac{\pi}{4}} 28 \tan^3 x dx$.

12. Find the indefinite integral by making the substitution $x = 2 \sin \theta$.

$$\int \frac{2}{x^2 \sqrt{4-x^2}} dx$$

13. Use partial fractions to find the integral $\int \frac{18x - 162}{x^2 - 18x + 81} dx.$

14. Use partial fractions to find the integral $\int \frac{15x^2 + 4x + 128}{x^3 + 16x} dx.$

15. Find the indefinite integral.

$$\int \cos^3 5x dx$$

16. Use substitution to find the integral $\int \frac{e^x}{(e^{2x} + 1)(e^x - 7)} dx.$

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Answer Section

SHORT ANSWER

1. $\frac{3}{16\pi} \sin 8\pi x^2 + C$

2. $\arcsin\left(\frac{x+5}{\sqrt{33}}\right) + C$

3. $y = \frac{1}{5} \arctan\left(\frac{\tan x}{5}\right) + C$

4. $\frac{x^2}{2} + 7x + 49 \ln|x-7| + C$

5. $-8(x^2 - 2x + 2)e^{-x} + C$

6. $\frac{2(5s-2)\sqrt{5s+1}}{75} + C$

7. $-\frac{2}{25}$

8. $-\frac{1}{140}(7 - 5\cos^2 4x)\cos^5 4x + C$

9. $\frac{2\sqrt{\sin 3\theta}(5 - \sin^2 3\theta)}{15} + C$

10. $\frac{1}{15} \sec^5 3x + C$

11. $\int_0^{\frac{\pi}{4}} 28 \tan^3 x dx = 14(1 - \ln 2)$

12. $\frac{\sqrt{4-x^2}}{4x} + C$

13. $9 \ln|x-9| + 9 \ln|x-9| + C$

14. $8 \ln|x| + \frac{7}{2} \ln(x^2 + 16) + \arctan\left(\frac{x}{4}\right) + C$

15. $\frac{\sin 5x(3 - \sin^2 5x)}{15} + C$

16. $\int \frac{e^x}{(e^{2x} + 7)(e^x - 7)} dx = \frac{1}{100} \left(2 \ln|e^x - 7| - \ln|e^{2x} + 1| - 14 \arctan(e^x) \right) + C$