

6.14 Selecting Techniques for Antidifferentiation

Write your questions and thoughts here!

What techniques for antidifferentiation have you learned in this unit?

Calculus AB/BC

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Calculus BC only

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Calculus

Find the indefinite integral.

1. $\int (3 \csc x \cot x - 1) dx$

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

3. $\int \frac{1}{\sqrt{-x^2 - 10x - 24}} dx$

$$4. \int 2^x dx$$

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

$$6. \int (5 - \sec^2 x) dx$$

$$7. \int \sqrt{x} \left(x - \frac{3}{x} \right) dx$$

$$8. \int \frac{1}{\sqrt{1-9x^2}} dx$$

$$9. \int \sec(5x) \tan(5x) dx$$

$$10. \int \frac{4x^2}{x-2} dx$$

$$11. \int_{-\infty}^0 e^{3x} dx$$

$$12. \int \frac{\sin x}{1+\cos^2 x} dx$$

$$13. \int \frac{10x^2-24x+12}{5x-2} dx$$

Evaluate the definite integral.

14. $\int_1^4 \left(\frac{1}{\sqrt{x}} - x^2 \right) dx$

15. $\int_1^2 \left(3x^2 - \frac{4}{x^2} + 1 \right) dx$

16. $\int_0^\pi (\sin x - 1) dx$

17. $\int_4^{16} -\sqrt{x} dx$

18. $\int_1^2 e^{1-x} dx$

19. $\int_4^x e^x dx$

20. $\int \frac{1}{(2x+1)(1-x)} dx$

$$21. \int_0^1 \frac{2x}{\sqrt{x^2+1}} dx$$

$$22. \int_0^{\frac{\pi}{8}} \tan(2x)\sec^2(2x) dx$$

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Test Prep

$$23. \int_{-1}^1 \frac{2}{1+x^2} dx =$$

(A) $-\pi$

(B) $-\frac{\pi}{2}$

(C) 0

(D) $\frac{\pi}{2}$

(E) π

$$24. \int x\sqrt{3x} dx =$$

(A) $\frac{2\sqrt{3}}{5}x^{\frac{5}{2}} + C$

(B) $\frac{5\sqrt{3}}{2}x^{\frac{5}{2}} + C$

(C) $\frac{\sqrt{3}}{2}x^{\frac{1}{2}} + C$

(D) $2\sqrt{3x} + C$

(E) $\frac{5\sqrt{3}}{2}x^{\frac{3}{2}} + C$