

Power Rule Integration

Find each indefinite integral. Give an exact antiderivative and include + C.

1.

$$\int -35 \cdot x^4 - 24 \cdot x^3 - 9 \cdot x^2 - 8 \, dx$$

2.

$$\int \frac{2}{3 \cdot x^{\frac{11}{7}}} \, dx$$

3.

$$\int \frac{-30}{x^7} \, dx$$

4.

$$\int 44 \cdot x^3 + 24 \cdot x - 1 \, dx$$

5.

$$\int \frac{97}{x^4} \, dx$$

6.

$$\int \frac{-2}{71 \cdot x^{\frac{7}{4}}} \, dx$$

7.

$$\int 18 \cdot x^2 \, dx$$

8.

$$\int \frac{-104}{x^3} \, dx$$

9.

$$\int \frac{17}{97 \cdot x^{\frac{5}{6}}} \, dx$$

10.

$$\int \frac{-2}{31 \cdot x^{\frac{10}{9}}} \, dx$$

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Power Rule Integration

Find each indefinite integral. Give an exact antiderivative and include + C.

11.

$$\int -30 \cdot x^4 + 24 \cdot x^3 + 246 \cdot x^2 - 1 \, dx$$

12.

$$\int \frac{-71}{x^4} \, dx$$

13.

$$\int \frac{-81}{x^6} \, dx$$

14.

$$\int 100 \cdot x^4 - 16 \cdot x^3 + 24 \cdot x^2 - 12 \cdot x \, dx$$

15.

$$\int \frac{7}{40 \cdot x^{\frac{5}{7}}} \, dx$$

16.

$$\int \frac{-13}{41 \cdot x^{\frac{11}{9}}} \, dx$$

17.

$$\int \frac{-29}{x^7} \, dx$$

18.

$$\int -36 \cdot x^3 \, dx$$

19.

$$\int -20 \cdot x^4 - 24 \cdot x^3 - 33 \cdot x^2 - 10 \, dx$$

20.

$$\int \frac{-63}{x^9} \, dx$$

Power Rule Integration

Worked Answer Key

Find each indefinite integral. Give an exact antiderivative and include + C.

1. $\int -35 \cdot x^4 - 24 \cdot x^3 - 9 \cdot x^2 - 8 \, dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $-7 \cdot x^5 - 6 \cdot x^4 - 3 \cdot x^3 - 8 \cdot x + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

2. $\int \frac{2}{3 \cdot x^{\frac{11}{7}}} \, dx$

Rewrite: $\frac{2}{3} \cdot x^{\frac{-11}{7}}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $-\frac{7}{6} \cdot x^{\frac{-4}{7}} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

3. $\int \frac{-30}{x^7} \, dx$

Rewrite: $-30 \cdot x^{-7}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $5 \cdot x^{-6} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

4. $\int 44 \cdot x^3 + 24 \cdot x - 1 \, dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $11 \cdot x^4 + 12 \cdot x^2 - 1 \cdot x + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

5. $\int \frac{97}{x^4} \, dx$

Rewrite: $97 \cdot x^{-4}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $-\frac{97}{3} \cdot x^{-3} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

6. $\int \frac{-2}{71 \cdot x^{\frac{7}{4}}} \, dx$

Rewrite: $\frac{-2}{71} \cdot x^{\frac{-7}{4}}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{8}{213} \cdot x^{\frac{-3}{4}} + C$

Original domain: $x > 0$. The antiderivative applies on each interval of this domain.

7. $\int 18 \cdot x^2 \, dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $6 \cdot x^3 + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

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8. $\int \frac{-104}{x^3} dx$

Rewrite: $-104 \cdot x^{-3}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $52 \cdot x^{-2} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

9. $\int \frac{17}{97 \cdot x^{\frac{5}{6}}} dx$

Rewrite: $\frac{17}{97} \cdot x^{\frac{-5}{6}}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{102}{97} \cdot x^{\frac{1}{6}} + C$

Original domain: $x > 0$. The antiderivative applies on each interval of this domain.

10. $\int \frac{-2}{31 \cdot x^{\frac{10}{9}}} dx$

Rewrite: $\frac{-2}{31} \cdot x^{\frac{-10}{9}}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{18}{31} \cdot x^{\frac{-1}{9}} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

11. $\int -30 \cdot x^4 + 24 \cdot x^3 + 246 \cdot x^2 - 1 dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $-6 \cdot x^5 + 6 \cdot x^4 + 82 \cdot x^3 - 1 \cdot x + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

12. $\int \frac{-71}{x^4} dx$

Rewrite: $-71 \cdot x^{-4}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{71}{3} \cdot x^{-3} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

13. $\int \frac{-81}{x^6} dx$

Rewrite: $-81 \cdot x^{-6}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{81}{5} \cdot x^{-5} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

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Worked Answer Key

Find each indefinite integral. Give an exact antiderivative and include + C.

14. $\int 100 \cdot x^4 - 16 \cdot x^3 + 24 \cdot x^2 - 12 \cdot x \, dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $20 \cdot x^5 - 4 \cdot x^4 + 8 \cdot x^3 - 6 \cdot x^2 + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

15. $\int \frac{7}{40 \cdot x^{\frac{5}{7}}} \, dx$

Rewrite: $\frac{7}{40} \cdot x^{-\frac{5}{7}}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{49}{80} \cdot x^{\frac{2}{7}} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

16. $\int \frac{-13}{41 \cdot x^{\frac{11}{9}}} \, dx$

Rewrite: $\frac{-13}{41} \cdot x^{-\frac{11}{9}}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{117}{82} \cdot x^{-\frac{2}{9}} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

17. $\int \frac{-29}{x^7} \, dx$

Rewrite: $-29 \cdot x^{-7}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{29}{6} \cdot x^{-6} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.

18. $\int -36 \cdot x^3 \, dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $-9 \cdot x^4 + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

19. $\int -20 \cdot x^4 - 24 \cdot x^3 - 33 \cdot x^2 - 10 \, dx$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $-4 \cdot x^5 - 6 \cdot x^4 - 11 \cdot x^3 - 10 \cdot x + C$

Original domain: all real values. The antiderivative applies on each interval of this domain.

20. $\int \frac{-63}{x^9} \, dx$

Rewrite: $-63 \cdot x^{-9}$

Increase each exponent by 1, then divide its coefficient by the new exponent.

Result: $\frac{63}{8} \cdot x^{-8} + C$

Original domain: $x \neq 0$. The antiderivative applies on each interval of this domain.