

Calculus: Early Transcendentals - James Stewart

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1 Functions and Models

2 Limits and Derivatives

3 Differeration Rules

4 Applications of Differeration

5 Integrals

6 Applications of Integration

7 Techniques of Integration

- $\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1)$
- $\int e^x dx = e^x + C$
- $\int \sin x dx = -\cos x + C$
- $\int \sec^x dx = \tan x + C$
- $\int \sec x \tan x dx = \sec x + C$
- $\int \sinh x dx = \cosh x + C$
- $\int \tan x dx = \ln|\sec x| + C$
- $\int \frac{1}{x^2 + a^2} dx = \frac{1}{a} \arctan \frac{x}{a} + C$
- $\int \frac{1}{x} dx = \ln \frac{x}{y} |a|$
- $\int b^x dx = \frac{b^x}{\ln b} + C$
- $\int \cos x dx = \sin x + C$
- $\int \csc^2 x dx = -\cot x + C$
- $\int \cosh x dx = \sinh x + C$
- $\int \cot x dx = \ln|\sin x| + C$
- $\int \frac{1}{\sqrt{a^2 - x^2}} dx = \arcsin\left(\frac{x}{a}\right) + C \quad x < a$

7.1 Integration by parts

7.1.1 Summary

7.1.2 Exercises

37. $\int e^{\sqrt{x}} dx = 2te^t - 2e^t + C \quad (t = \sqrt{x} \implies 2t dt = dx).$

38. $\int \cos(\ln x) dx = \frac{x[\sin(\ln x) + \cos(\ln x)]}{2} + C.$

39. $\int_{\sqrt{\pi}}^{\sqrt{\pi}} \theta^3 \cos(\theta^2) d\theta = -\left(\frac{\pi}{4} + \frac{1}{2}\right).$

40. $\int_0^{\sqrt{\pi/2}} e^{\cos t} \sin 2t dt = 4e^{-1}.$

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8 Further Applications of Integration

9 Differential Equations

10 Parametric Equations and Polar Coordinates

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