

Custom Calculus Test Problems

Problem 1

Find the derivative of: $\arctan(x)$

Problem 2

Find the derivative of: e^x

Problem 3

Find the integral of: $\log(\sqrt{x})$

Problem 4

Find the integral of: $\sin(x) \cos(x)$

Problem 5

Use U-substitution to find the integral of: $(2x + 1)^3$

Problem 6

Use integration by parts to find the integral of: xe^x

Problem 7

Find the integral of the trigonometric function: $\sin(x) \cos(x)$

Problem 8

Use trigonometric substitution to find the integral of: $\sqrt{x^2 - 1}$

Problem 9

Use partial fractions to find the integral of: $\frac{1}{x(x+1)}$

Problem 10

Find the improper integral of: $\frac{1}{x^2+1}$ from 1 to ∞

Problem 11

Find the limit of: $\sin(\pi x)$ as x approaches ∞