Custom Calculus Test Problems

Problem 1

Find the derivative of: $\sqrt[3]{x}$

Problem 2

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

Problem 3

Find the integral of: $\sec(x)$

Problem 4

Find the integral of: $e^{\sin(x)}$

Problem 5

Use U-substitution to find the integral of: $\sin(2x)$

Problem 6

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

Problem 7

Find the integral of the trigonometric function: $\cos^2(x)$

Problem 8

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

Problem 9

Use partial fractions to find the integral of: $\frac{1}{x^2+1}$

Problem 10

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

Problem 11

Find the limit of: $\frac{1}{x^2+1}$ as x approaches 0