

# Custom Calculus Test Problems

## Problem 1

Find the derivative of:  $e^x$

## Problem 2

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

### Problem 3

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

### Problem 4

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

## Problem 5

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

## Problem 6

Use integration by parts to find the integral of:  $x \log(x)$

## Problem 7

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

## 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  $\infty$

## Problem 11

Find the limit of:  $\log(x)$  as  $x$  approaches  $\infty$