

# CK 2025 INTEGRATION BEE SEEDING ROUND

May 8th, 2025

**Problem 1.**

$$\int \frac{2x^2 + x + 1}{x} dx =$$

**Problem 2.**

$$\int \left( \frac{\sin(x) \tan(x)}{\sec(x)} + \frac{\cos(x) \cot(x)}{\csc(x)} \right) dx =$$

**Problem 3.**

$$\int x^{\frac{1}{\log_2 x}} dx =$$

**Problem 4.**

$$\int \frac{e^x}{\sqrt{\cos^2(x) - e^{2x} + \sin^2(x)}} dx =$$

**Problem 5.**

$$\int \sec^2 x \tan x dx =$$

**Problem 6.**

$$\int (xe^x + e^x) dx =$$

**Problem 7.**

$$\int \frac{1}{\sqrt{x}(25 + 9x)} dx =$$

**Problem 8.**

$$\int \cos(\sqrt{x}) dx =$$

**Problem 9.**

$$\int_{-\sqrt{3}}^{\sqrt{3}} \frac{3 - x^2}{\sqrt{4 - x^2} + 1} dx =$$

**Problem 10.** Estimate

$$\int_0^{2025} \frac{1}{x^x + x^{-x}} dx =$$

If  $A$  is the correct answer to this problem and the answer you submit is  $v$ , you will receive a score of  $\min\left(\frac{A}{v}, \frac{v}{A}\right)$  if  $v$  is positive and 0 otherwise.