

CMM 2026 Integration Bee Qualifying Exam

CALTECH MATH MEET

January 24, 2026

1 Rules

You have 10 minutes to solve these 12 integrals. Your score is the number of answers you get correct. Write your answers in simplest form. You do not need to include the +C or absolute value bars for ln.

2 Integrals

1. $\int_1^e \frac{\ln(x)}{x^3} dx$

2. $\int_0^{\pi/2} \sin^3(x) \sqrt{\cos(x)} dx$

3. $\int_{-1}^1 (x + x^2 + x^4 + x^8) \sin(x) dx$

4. $\int_0^{10} |3x^2 - 12| dx$

5. $\int \frac{dx}{x + \sqrt[3]{x}}$

6. $\int_{-\pi/2}^0 \frac{1}{\sqrt{1-\sin(x)}} dx$

7. $\int_0^1 \frac{x^4(1-x)^2}{1+x^2} dx$

8. $\int_{-\infty}^{\infty} \frac{e^{-x^2}}{1+e^x} dx$

9. $\int_0^6 \sqrt{x + \sqrt{x + \sqrt{x + \dots}}} dx$

10. $\int e^{x+e^x-e^{e^x}} dx$

11. $\int_{\frac{1}{e}}^e \left(\frac{\arctan(x)}{x} \right) dx$

12. $\int_0^1 x \lfloor \frac{1}{x} \rfloor dx$

3 Answers

Problem 1. -----	Problem 2. -----	Problem 3. -----
Problem 4. -----	Problem 5. -----	Problem 6. -----
Problem 7. -----	Problem 8. -----	Problem 9. -----
Problem 10. -----	Problem 11. -----	Problem 12. -----