Bibee 2026 Integrals

Integral selection committee

May 2026

1 Kahoot

1. **Series-ly???**
$$\int_0^{\pi} \sum_{k=1}^{2026} \frac{1+\cos(2kx)}{2}\,\mathrm{d}x$$
2. **I know this one!**
$$\int_{-\infty}^{0} x^2 e^{x^3}\,\mathrm{d}x$$
3. **Watch out!**
$$\int_{-\infty}^{\infty} e^{-z^2}\,\mathrm{d}x$$
4. **Watch out! (Part 2)**
$$\int_{-\infty}^{\infty} \lfloor e^{-\lceil x^2 \rceil} \rfloor \mathrm{d}x$$
5. **Trig-Trag-Troe.**
$$\int \frac{\mathrm{d}x}{\sec(x)+\tan(x)\sin(x)}$$
6. **Determinated.**
$$\int_0^{\frac{1}{3}} 3\det\begin{pmatrix} 1 & e^{-x} & e^{x} \\ e^{x} & 1 & e^{-x} \\ e^{-x} & e^{x} & 1 \end{pmatrix}\,\mathrm{d}x$$
7. **Funny?**
$$\int_6^7 (6x^2-7x^2)^{6-7}\,\mathrm{d}x$$
8. **Yes, you have to actually do this**
$$\int_0^{24} \lfloor \sin x \rfloor \mathrm{d}x$$
9. **Beep beep**
$$\int_0^{\pi} \frac{1}{1+\tan x} + \frac{1}{1+\cot x}\mathrm{d}x$$

10. **Can you FIX it?**
$$\int_0^1 [\cos(\arctan(x))+\sin(\arctan(x))]^2+[\cos(\arctan(x))-\sin(\arctan(x))]^2 \mathrm{d}x$$

11. **How fast am I, going to infinity?**
$$\int_0^x \cos(\cos(\cos(\cos(\cos(...(t)...))))) \mathrm{d}t$$

12. **Dividing Polynomials**
$$\int_0^1 \frac{x^3+3x^2+3x}{x+1} \mathrm{d}x$$

13. **What's our favorite animal?**
$$\int_0^2 \int_0^2 \int_0^2 \int_0^2 \int_0^2 beeee \, \mathrm{d}b \, \mathrm{d}e \, \mathrm{d}e \, \mathrm{d}e \, \mathrm{d}e$$

14. **The world's smallest violin!**
$$\int_0^{0.2026} \frac{1}{2\sqrt{|𝄞-0.0001|}} \, \mathrm{d} \, 𝄞$$

15. **Another 2026!**
$$\int_0^{\sqrt{2026}} \frac{(2x)^2}{\sqrt{2026-x^2}} \mathrm{d}x$$

16. **Weeeeeeeeeeeeeeeee!**
$$\int_0^1 e^{e^{e^{e^{e^x}}}} e^{e^{e^{e^x}}} e^{e^{e^x}} e^{e^x} e^x \, \mathrm{d}x$$

17. **Trippy greeting from the MIT :O**
$$\int_{\int_{\int_0^1 x \, \mathrm{d}x}^{1} x \, \mathrm{d}x}^{\int_0^{\int_0^{\int_0^1 x \, \mathrm{d}x} x \, \mathrm{d}x} x \mathrm{d}x} x \, \mathrm{d}x = \int_{\frac{55}{128}}^{\frac{1}{128}} x \, \mathrm{d}x$$

18. **A radical product.**
$$\int_0^1 \prod_{n=1}^{\infty} \sqrt[n^2]{1+x} \, \mathrm{d}x$$

19. **Is it even integrable?**
$$\int x^{\frac{\ln \sin x}{\ln x}} \mathrm{d}x$$

20. **A famous one**
$$\int_1^{\infty} \frac{1}{\lceil x \rceil^2} \mathrm{d}x$$

21. **Sneaky Euler.**
$$\int_0^{\frac{\pi}{2}} e^{ix}\cos(x)\,\mathrm{d}x$$

22. **Back to the roots!**
$$\int_0^5 \sqrt{x\sqrt{x\sqrt{x\ldots}}}\,\mathrm{d}x$$

23. **Log salad.**
$$\int_{e^2}^{e^4} \frac{\ln 2x}{x\ln x}\mathrm{d}x$$

24. **OG change of basis**
$$\int_0^1 5^{\log_2 x}\mathrm{d}x$$

25. **Welcome to Bonn Integration Bee**
$$\int_0^\infty 2026^{-x}\mathrm{d}x$$

2 Tiebreakers

1. **QuadWave!**
$$\int \sin^2(x)\cos^2(x)\mathrm{d}x$$

2. **I hope you have good eyes.**
$$\int_0^1 2026202620262026202620262026^x\,\mathrm{d}x$$

3. **Geometry... without triangles!?**
$$\int \frac{(1+x+x^2+\cdots+x^{2024})(1-x^3)}{1+x+x^2}\,\mathrm{d}x$$

4. **Is this what you think?**
$$\int_0^3 4\lfloor x\rfloor^{\lceil x\rceil^{\lfloor x\rfloor}} + \lceil x\rceil^{\lceil x\rceil} - \lfloor x\rfloor^{\lfloor x\rfloor}\mathrm{d}x$$

5. **Neper's Root**
$$\int \sqrt{e^x-1}\,\mathrm{d}x$$

6. **See you on the 3rd floor.**
$$\int_0^3 2(\lfloor x\rfloor^{\lceil x\rceil^{\lfloor x\rfloor}} + 250\lfloor\sqrt{x}\rfloor)\,\mathrm{d}x$$

7. **There is always one trig integral more.**
$$\int \frac{\mathrm{d}x}{9\cos^2(x)+4\sin^2(x)}$$

8. **Double root.**
$$\int_0^1 \sqrt{x}e^{\sqrt{x}}\mathrm{d}x$$

9. **From floor to ceiling.**
$$\int_0^5 (\left\lfloor \frac{x}{2} \right\rfloor - \left\lceil \frac{x}{3} \right\rceil)\,\mathrm{d}x$$

10. **Where does π come from?**
$$\int_{1/e}^{e} \arctan x\,\frac{(\ln x)^{2026}}{x}\,dx$$

11. **Happy New Year!?**
$$\lim_{R\to\infty}\int_{-R}^{R}\prod_{j=0}^{2026}\frac{1}{j+1}x^{j^2+j+1}\,\mathrm{d}x$$

12. **The last integral of the evening is really shit.**
$$\int_0^1 x^{13}+67x+x^9+13x^{12}+3x^6+2(x+1)^{-3}\mathrm{d}x$$

3 QF

1. **Root of all Problems.**
$$\int_1^2 \frac{x^5}{\sqrt{x^3-1}}\mathrm{d}x$$

2. **Antagonist views**
$$\int \frac{4x^2+6x+1}{x^3+2x^2+x+2}\mathrm{d}x$$

3. **Walking in circles.**
$$\int_0^{2\pi}\prod_{n=0}^{2026}(n^2+1)\cos\left(\frac{x}{3}\prod_{n=0}^{2026}(n^2+1)\right)\mathrm{d}x$$

4. **Fraction Action!?**
$$\int_0^\infty \frac{\{x\}}{(\lfloor x\rfloor+1)^2}\,\mathrm{d}x$$

5. **Unreasonably rational!**
$$\int \frac{2x^2+3x+1}{x^3+x^2+x}\,\mathrm{d}x$$

6. **Digitization!**
Let $s(n)$ denote the **digit sum of n**. / Sei $s(n)$ die **Quersumme von n**.
$$\int_0^1 s(\lfloor 100x\rfloor)\mathrm{d}x$$

7. **Dotsy and messy**
$$\int_0^1 \sqrt{x^2+x+\sqrt{x^2+x+\sqrt{\dots}}}\,dx$$

8. **Some ancient Greek would be proud for sure...**
$$\int_0^1 \arctan\left(\frac{\sqrt{1-x^2}}{x}\right)\mathrm{d}x$$

4 SF

1. **If you know, you know.**
$$\int_0^{\pi/4} \frac{\sqrt{\tan(x)}}{\cos^4(x)}\mathrm{d}x$$

2. **Polynomial Chaos!**
$$\int_{\ln\left(\frac{e^2}{\sqrt{5}}\right)}^{\ln\left(e^2\sqrt{5}\right)} (x^5-10x^4+40x^3-80x^2+80x-30)(\cos(x)\cos(2)+\sin(x)\sin(2))\,\mathrm{d}x$$

3. **Delicious!!**
$$\lim_{n\to\infty}\int_1^9 \sum_{k=1}^{n} \frac{1}{\sqrt{n^2x+k}}\,\mathrm{d}x$$

4. **$\pi/3$ and $\pi/4$ would be worse boundaries**
$$\int_0^{\pi/3} \tan^2(x)x\mathrm{d}x$$

5 3rd Place

1. **This Partialbruchzerlegung is nasty.**
$$\int_{\sqrt{2}}^{\sqrt{3}} \frac{x^3(x^2+3)}{(x^4-1)(x^2+1)}\mathrm{d}x$$

2. **Modest but beautiful.**
$$\int \frac{\sin(x)}{\sin(x)+1}\mathrm{d}x$$

3. **Tricky Trigs.**
$$\int_0^{\frac{\pi}{2}} (\sin(x)^{2\cos(x)-1}\cos^2(x)-\sin(x)^{2\cos(x)+1}\ln(\sin(x))\,\mathrm{d}x$$

4. **Quotients**
$$\int_1^{\infty} \frac{e^{-x}}{x}+\frac{e^{-x}}{x^2}\mathrm{d}x$$

6 Final

1. **Roots bloody roots!**
$$\int_0^{\infty} \frac{\ln x}{(1+x^{\sqrt{2}})^{\sqrt{2}}}\,\mathrm{d}x$$

2. **Can you spot the ODE?**
$$\int_{-\infty}^{0} \frac{(x+\sqrt{1+x^2})^{2026}}{\sqrt{1+x^2}}\mathrm{d}x$$

3. **Pure Purgatory.**
$$\lim_{n\to\infty} \sqrt{\pi n}\int_0^1 \frac{x^{2n}}{\sqrt{1-x^2}}\mathrm{d}x$$

4. **Not spherical, that's hyperbolic!**
$$\int \frac{\sqrt{9\cosh^2(x)\sinh^2(x)-3\sinh^2(x)+1}}{\cosh(x)\sinh(x)}\mathrm{d}x$$

5. **Dancing constants**
$$\int_0^{\frac{\pi}{2}} \frac{e^{|x-\frac{\pi}{4}|}}{1+\tan^{\varphi}x}\mathrm{d}x.$$

7 Bonus for those who want real stress in their life

1. **A Phi-nomenal Integral.**
$$\int_0^{\infty} \frac{\mathrm{d}x}{(1+x^{\phi})^{\phi}}$$