Integration Bee Answer Key

HMMT November 2025

Qualifiers

1. 2025
2. $\frac{x^2}{2}$
3. $-\frac{x^2}{2} - \log(1-x)$
4. 0
5. 2
6. $\frac{3\pi}{2}$
7. $-x$
8. $\frac{\pi}{2}$
9. $x \log \log x$
10. $x - \cos x \log(\sec x + \tan x)$
11. $\frac{1}{x - x \log x}$
12. $\frac{\pi^2}{4}$
13. $x^2 e^{1/x}$
14. $4 \log(2) - 4$
15. $e^x \tan x - e^x$
16. $\log((x^3 - x + 1)/x^3)$
17. $\tan x \sec x$
18. $\sqrt{e\pi}$
19. $\frac{\pi}{24300}$
20. $3.851171211028080292321291899073 87$

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Finals

Sample

[1] $\frac{2025}{2}$

[2] $\frac{1}{2026}$

Semifinal 1

[1] $x \log x \sin x + \cos x$

[2] $(x+2)e^{x^2/2}$

[3] $-\frac{2^{20}}{30}$

Semifinal 2

[1] $\frac{x^2}{2}\log(1+x^4) + \arctan(x^2) - x^2$

[2] $-\frac{x+1}{e^x+1}$

[3] 15π

Audience Round

[1] $\frac{2^{99}-1}{9900}$

Final

[1] $\log(x-1)\log(x+1)$

[2] 2

[3] $1 - \frac{\pi}{4}$

[4] $\sqrt{\pi}$

[5] $\frac{-\cos x}{x + \sin x}$

Sudden Death

[1] $\frac{\pi}{6}$

[2] $\frac{58}{15}$

[3] $\frac{3\pi}{4}$

[4] $\log 2 - \frac{1}{2}$

[5] 0

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