

# Integration Bee Qualifier 2023

1. 
$$\int_0^{10} e^x dx$$
2. 
$$\int_0^{\sqrt{\frac{\pi}{2}}} x \sin(x^2) dx$$
3. 
$$\int_0^3 x^3 e^{2x} dx$$
4. 
$$\int_0^{\frac{\pi}{2}} \cos^3(x) \sin^2(x) dx$$
5. 
$$\int_0^{\frac{\pi^2}{4}} \sin(\sqrt{x}) dx$$
6. 
$$\int_2^5 \frac{1}{x^3 - x^2} dx$$
7. 
$$\int_0^6 \sqrt{6x - x^2} dx$$
8. 
$$\int_0^1 (x^4 + 4x^3 + 5x^2 + 2x) dx$$
9. 
$$\int_1^e \ln(x) dx$$
10. 
$$\int_{-1}^1 \frac{1}{\sqrt{|x|}} dx$$
11. 
$$\int_0^1 \frac{1 - \sqrt{x}}{1 + \sqrt{x}} dx$$
12. 
$$\int_0^{\sqrt{3}} \frac{x + \sqrt{x^2 + 1}}{x^2 + 1 + x\sqrt{x^2 + 1}} dx$$
13. 
$$\int_0^{\frac{\pi}{2}} \frac{1}{1 + \tan(x)} dx$$
14. 
$$\int_0^1 \sqrt{x\sqrt{x\sqrt{x\dots}}} dx$$
15. 
$$\int_0^2 x^3(2-x)^4 dx$$
16. 
$$\int_0^1 \frac{(3x^2 + 8) \sqrt[3]{3x + \frac{16}{x} + \frac{8}{x^3}}}{3x^2 + 16 + \frac{8}{x^2}} dx$$
17. 
$$\int_0^\infty \sin(x^2) dx$$
18. 
$$\int_0^\infty \frac{1}{(x^2 + 1)^5} dx$$
19. 
$$\int_0^1 \sin(x^3) dn$$
20. 
$$\int_0^\infty \frac{\sin(2023x) - 2023 \sin(x)}{2023x^2} dx$$