

## 2013 MIT Integration Bee Qualifying Round

**1**  $\int \log(x^2) - 2 \log(2x) dx$

**13**  $\int \tan^2 x dx$

**2**  $\int_{-1}^3 e^{|x|} dx$

**14**  $\int_0^{256} (x - \lfloor x \rfloor)^2 dx$

**3**  $\int \frac{(\log x)(\cos x) - (\sin x)(1/x)}{(\log x)^2} dx$

**15**  $\int e^{\sqrt[4]{x}} dx$

**4**  $\int_1^{11} x^3 - 3x^2 + 3x - 1 dx$

**16**  $\int \cos x \cot x dx$

**5**  $\int_0^2 \sqrt{12 - 3x^2} dx$

**17**  $\int 2 \log x + (\log x)^2 dx$

**6**  $\int_0^6 x + (x-3)^7 + \sin(x-3) dx$

**18**  $\int \frac{x^3}{1+x^2} dx$

**7**  $\int \sin x \sqrt{1 + \tan^2 x} dx$

**19**  $\int \frac{1}{2 - 2x + x^2} dx$

**8**  $\int \frac{x^5 - x^3 + x^2 - 1}{x^4 - x^3 + x - 1} dx$

**20**  $\int \sin x \log(\sin x) dx$

**9**  $\int_0^1 \log x dx$

**21**  $\int \frac{x}{1-x^4} dx$

**10**  $\int \frac{1}{1-e^{-x}} dx$

**22**  $\int \sqrt{12 - 3x^2} dx$

**11**  $\int_0^\pi \sin^2 x \cos^2 x dx$

**23**  $\int \sec^5 x \tan^3 x dx$

**12**  $\int_0^{441} \frac{\pi \sin(\pi\sqrt{x})}{\sqrt{x}} dx$

**24**  $\int_{-\pi/4}^{\pi/4} \frac{1}{1-\sin x} dx$

**25**  $\int \frac{1}{x\sqrt{x^2-2}} dx$