Answers to Integration Bee

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- Q1: $\frac{x^{e+1}}{e+1} + C$
- Q2: $\frac{420!}{2^{420}(210!)^2} \cdot \pi$
- Q8: $\frac{\pi}{9}$
- Q15: $1 - \tan\left(\frac{x}{2}\right) + \frac{2}{\tan\left(\frac{x}{2}\right)+1} + 2\log\left(\tan\left(\frac{x}{2}\right) + 1\right) + C$
- Q18: $\sqrt{-x(x-1)} + \arcsin(\sqrt{x})$
- Q20: $\frac{1}{2}\left(x\sqrt{x^2-1} - \log(\sqrt{x^2-1} + x\right) + C$
- Q21: Rather long:

$$\frac{a}{2\sqrt{1+\cos(a)}}\Big(\ln(\sqrt{1-\cos(a)}\cdot\frac{3a}{2} + \sqrt{1+\cos(a)}) - \ln(\sqrt{1+\cos(a)} - \sqrt{1-\cos(a)}\cdot\frac{3a}{2}$$

$$- \ln(\sqrt{1-\cos(a)}\cdot\frac{a}{2} + \sqrt{1+\cos(a)}) + \ln(\sqrt{1+\cos(a)} - \sqrt{1-\cos(a)}\cdot\frac{a}{2}\Big)$$

- Q29: $\frac{1}{e-1}$
- Q31: $2 - \frac{\pi^2}{6}$
- Q34: 2
- Q35: $e - 1$