

Special Quiz 1

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The answer here is for reference only.

1. $\int_1^8 x^{-\frac{1}{3}} dx = \frac{9}{2}$
2. $\int_1^e \frac{\ln x}{x} dx = \frac{1}{2}$ (Hint: use substitution $u = \ln x$)
3. $\int_1^2 \frac{(x-1)^2}{x} dx = \ln 2 - \frac{1}{2}$ (Hint: expand $(x-1)^2$ directly)
4. $\int_0^{\frac{\pi}{4}} \sec^2 x dx = 1$
5. $\int_0^2 x^2 \sqrt{x^3 + 1} dx = \frac{52}{9}$ (Hint: use substitution $u = x^3$)
6. $\int_0^1 \frac{1}{(1+2x)^2} dx = \frac{1}{3}$ (Hint: use substitution $u = 2x + 1$)
7. $\int_0^{\frac{\pi}{4}} \sin^3 x \cos x dx = \frac{1}{16}$