Integration Strategies

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1. Simplify the integrand if possible

$$\begin{aligned}&\int (sinx + cocsx)^2 \ dx \\ &= \int (sin^2x + 2sinxcosx + cos^2x) \ dx \\ &= \int 1 + sin2x \ dx\end{aligned}$$

2. Look for obvious substitution

$$\begin{aligned}&\int x^3 e^{x^4} \ dx \\ &u = x^4 \\ &\frac{1}{4}\int e^u \ du\end{aligned}$$

3. Classify the integrand according to its form and use a corresponding method
   (a) $\int \sin^m x \cos^n x \ dx$
   (b) $\int \tan^m x \sec^n x \ dx$
   (c) $\int \frac{P(x)}{Q(x)} \ dx$
4. Integration by parts
5. Use trig substitution for radicals
6. Try another method