Questions to ask before integrating

1. Does the expression have a nice antiderivative?
2. Is there any algebra that would simplify the expression?
3. Is the derivative of the "inside" on the outside?

1. $\displaystyle\int \sin x \cos x \, dx$

2. $\displaystyle\int \sec\theta \tan\theta \, d\theta$

3. $\displaystyle\int \frac{x+1}{x^3} \, dx$

4. $\displaystyle\int 4x^3 \sec(x^4) \tan(x^4) \, dx$

5. $\displaystyle\int \frac{x^3}{\sqrt{x^2+1}} \, dx$