Speed Quiz Competition

RULES

1. For each integral shown, state a method that could be used to successfully evaluate it.

   for instance:

   - u-substitution (give the substitution)
   - integration by parts
   - using trigonometric identities
   - trigonometric substitution
   - partial fraction decomposition

   You do not need to evaluate the integral!

2. Select how many points (1, 2, or 3) you are wagering on each question.

   Incorrect answers count as negative points!

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

2. $\int x \sin\left(x^2\right) dx$

3. $\int \sin^2 x \, dx$

4. $\int \sin^3 x \, dx$

5. $\int \frac{1}{x^2 - 4}\, dx$

6. $\int \frac{1}{x^2+4}\,dx$

7. $\int \frac{x}{x^2+4}\,dx$

8. $\int \frac{x^2}{x^2+4}\,dx$

9. $\int \frac{x^2}{\sqrt{x^2+4}}\,dx$

10. $\int \frac{\ln x}{x^4}\, dx$

11. $\int \frac{3x+2}{x^2-x-6}\,dx$

12. $\int \left(1-9x^2\right)^{3/2} dx$