1. \[ \int 2xe^{3x} \, dx \]

2. \[ \int x \ln x \, dx \]

3. \[ \int x \sin x \cos x \, dx \]

4. \[ \int \tan^{-1} x \, dx \]
5. \[ \int_0^1 \sin 2xe^x \, dx \]

6. (Test Question) \[ \int_0^1 x^2 e^{2x} \, dx \]

7. (Test Question) The region under the graph \( y = \sin(2x) \) for \( 0 \leq x \leq \frac{\pi}{2} \) is revolved about the \( y \)-axis. Find the volume of the resulting solid.

8. (Test Question) \[ \int x^8 \ln x \, dx \]