1. Consider $\int te^{2t}\,dt$.

   a. Using $u = t$, find du.

   b. Using $dv = e^{2t}dt$, find v.

   c. Compute $\int udv = uv - \int vdu$.

2. Consider $\int 3t^2 \sin(t)\, dt$.

   a. Using $u = 3t^2$, find du.

   b. Using $dv = \sin(t)dt$, find v.

   c. Compute $\int udv = uv - \int vdu$.

   d. What would you need to do to finish the problem?

3. Compute $\int 2t^2 \sin(5t)\, dt$.

4. Compute $\int e^{-x}\cos(2x)\,dx$.