MATH 2D Prep: Integration Techniques

Facts to Know:

1. Substitution Rule:
   - $\int_a^b f(g(x))g'(x)dx =$
   - $u =$ $du =$
2. Integration by part:
   - $\int_a^b f(x)g'(x)dx =$
   - $u =$ $du =$ $v =$ $dv =$

Examples:

1. Evaluate $\int_0^{\pi/4} \cos^2(x)\sin(x)dx$

   $u =$ $du =$,

2. Evaluate $\int_0^1 x^2 e^x dx$

   $u =$ $du =$ $v =$ $dv =$,