

2. $\int \sin x \cos x dx$

(a) $\int \sin x \cos x dx$ Let $u = \sin x$, then $du = \cos x dx$.
 $\int u du = \frac{1}{2} u^2 + C = \frac{1}{2} \sin^2 x + C$

(b) $\int \sin x \cos x dx$ Let $u = \cos x$, then $du = -\sin x dx$.

(c) $\int \sin x \cos x dx$ Let $u = \sin x$, then $du = \cos x dx$.
 $\int u du = \frac{1}{2} u^2 + C = \frac{1}{2} \sin^2 x + C$

(d) $\int \sin x \cos x dx$ Let $u = \cos x$, then $du = -\sin x dx$.
 $\int -u du = -\frac{1}{2} u^2 + C = -\frac{1}{2} \cos^2 x + C$