

**Mathematics 204**  
Basic Integral Formulas

$$1. \int u^n du = \frac{u^{n+1}}{n+1} + C \quad (n \neq -1)$$

$$18. \int U dV = UV - \int V dU$$

$$2. \int \frac{du}{u} = \ln|u| + C$$

$$19. \int f(g(x))g'(x) dx = \int f(u) du$$

$$3. \int e^u du = e^u + C$$

$$4. \int \sin(u) du = -\cos(u) + C$$

$$5. \int \cos(u) du = \sin(u) + C$$

$$6. \int \sec^2(u) du = \tan(u) + C$$

$$7. \int \csc^2(u) du = -\cot(u) + C$$

$$8. \int \sec(u) \tan(u) du = \sec(u) + C$$

$$9. \int \csc(u) \cot(u) du = -\csc(u) + C$$

$$10. \int \sec(u) du = \ln|\sec(u) + \tan(u)| + C$$

$$11. \int \csc(u) du = -\ln|\csc(u) + \cot(u)| + C$$

$$12. \int \tan(u) du = -\ln|\cos(u)| + C$$

$$13. \int \cot(u) du = \ln|\sin(u)| + C$$

$$14. \int \sinh(u) du = \cosh(u) + C$$

$$15. \int \cosh(u) du = \sinh(u) + C$$

$$16. \int \frac{du}{a^2 + u^2} = \frac{1}{a} \tan^{-1}\left(\frac{u}{a}\right) + C$$

$$17. \int \frac{du}{\sqrt{a^2 - u^2}} = \sin^{-1}\left(\frac{u}{a}\right) + C$$