

1. $\int \frac{u \, du}{a + bu} = \frac{u}{b} - \frac{a}{b^2} \ln |a + bu| + C$
2. $\int \frac{du}{u^2(a + bu)} = -\frac{1}{au} + \frac{b}{a^2} \ln \left| \frac{a + bu}{u} \right| + C$
3. $\int \frac{du}{u(a + bu)} = \frac{1}{a} \ln \left| \frac{u}{a + bu} \right| + C$
4. $\int \frac{u \, du}{(a + bu)^2} = \frac{1}{b^2} \left(\ln |a + bu| + \frac{a}{a + bu} \right) + C$
5. $\int \frac{du}{u(a + bu)^2} = \frac{1}{a(a + bu)} + \frac{1}{a^2} \ln \left| \frac{u}{a + bu} \right| + C$
6. $\int \frac{du}{u^2(a + bu)^2} = -\frac{a + 2bu}{a^2 u(a + bu)} + \frac{2b}{a^3} \ln \left| \frac{a + bu}{u} \right| + C$
7. $\int \frac{du}{(a + bu)(c + ku)} = \frac{1}{bc - ak} \ln \left| \frac{a + bu}{c + ku} \right| + C$
8. $\int \frac{u \, du}{(a + bu)(c + ku)} = \frac{1}{bc - ak} \left(\frac{c}{k} \ln |c + ku| - \frac{a}{b} \ln |a + bu| \right) + C$
9. $\int \frac{u^2 \, du}{(a + bu)^2} = \frac{1}{b^3} \left(bu - \frac{a^2}{a + bu} - 2a \ln |a + bu| \right) + C$
10. $\int \frac{u^2 \, du}{(a + bu)^3} = \frac{1}{b^3} \left(\frac{2a}{a + bu} - \frac{a^2}{2(a + bu)^2} + \ln |a + bu| \right) + C$
11. $\int \frac{u^2 \, du}{(a + bu)^n} = \frac{1}{b^3} \left(\frac{-1}{(n-3)(a + bu)^{n-3}} + \frac{2a}{(n-2)(a + bu)^{n-2}} \dots \right. \\ \left. \dots - \frac{a^2}{(n-1)(a + bu)^{n-1}} \right) + C \quad (n \neq 1, 2, 3)$
12. $\int \frac{du}{u^2 - a^2} = \frac{1}{2a} \ln \left| \frac{u - a}{u + a} \right| + C \quad (a > 0)$
13. $\int u \sqrt{a + bu} \, du = \frac{2(3bu - 2a)(a + bu)^{3/2}}{15b^2} + C$
14. $\int u^2 \sqrt{a + bu} \, du = \frac{2(8a^2 - 12abu + 15b^2u^2)(a + bu)^{3/2}}{105b^3} + C$
15. $\int \frac{u \, du}{\sqrt{a + bu}} = \frac{2(bu - 2a)\sqrt{a + bu}}{3b^2} + C$
16. $\int \frac{u^2 \, du}{\sqrt{a + bu}} = \frac{2(3b^2u^2 - 4abu + 8a^2)\sqrt{a + bu}}{15b^3} + C$
17. $\int \frac{du}{u\sqrt{a + bu}} = \frac{1}{\sqrt{a}} \ln \left| \frac{\sqrt{a + bu} - \sqrt{a}}{\sqrt{a + bu} + \sqrt{a}} \right| + C \quad (a > 0)$
18. $\int \frac{\sqrt{a + bu} \, du}{u} = 2\sqrt{a + bu} + \sqrt{a} \ln \left| \frac{\sqrt{a + bu} - \sqrt{a}}{\sqrt{a + bu} + \sqrt{a}} \right| + C \quad (a > 0)$
19. $\int \frac{du}{u\sqrt{a^2 - u^2}} = -\frac{1}{a} \ln \left| \frac{a + \sqrt{a^2 - u^2}}{u} \right| + C \quad (a > 0)$
20. $\int \frac{du}{u^2\sqrt{a^2 - u^2}} = -\frac{\sqrt{a^2 - u^2}}{a^2u} + C$
21. $\int \frac{\sqrt{a^2 - u^2} \, du}{u} = \sqrt{a^2 - u^2} - a \ln \left| \frac{a + \sqrt{a^2 - u^2}}{u} \right| + C \quad (a > 0)$

$$22. \int \sqrt{u^2 \pm a^2} \, du = \frac{1}{2} \left(u \sqrt{u^2 \pm a^2} \pm a^2 \ln \left| u + \sqrt{u^2 \pm a^2} \right| \right) + C$$

$$31. \int (u^2 \pm a^2)^{3/2} \, du = \frac{u}{8} \left(2u^2 \pm 5a^2 \right) \sqrt{u^2 \pm a^2} + \frac{3a^4}{8} \ln \left| u + \sqrt{u^2 \pm a^2} \right| + C$$

$$23. \int u^2 \sqrt{u^2 \pm a^2} \, du = \frac{u}{8} \left(2u^2 \pm a^2 \right) \sqrt{u^2 \pm a^2} - \frac{a^4}{8} \ln \left| u + \sqrt{u^2 \pm a^2} \right| + C$$

$$32. \int \frac{du}{(u^2 \pm a^2)^{3/2}} = \frac{\pm u}{a^2 \sqrt{u^2 \pm a^2}} + C$$

$$24. \int \frac{\sqrt{u^2 + a^2} \, du}{u} = \sqrt{u^2 + a^2} - a \ln \left| \frac{a + \sqrt{u^2 + a^2}}{u} \right| + C \quad (a > 0)$$

$$33. \int \frac{u^2 \, du}{(u^2 \pm a^2)^{3/2}} = \frac{-u}{\sqrt{u^2 \pm a^2}} + \ln \left| u + \sqrt{u^2 \pm a^2} \right| + C$$

$$25. \int \frac{\sqrt{u^2 \pm a^2} \, du}{u^2} = -\frac{\sqrt{u^2 \pm a^2}}{u} + \ln \left| u + \sqrt{u^2 \pm a^2} \right| + C$$

$$34. \int u^n e^{au} \, du = \frac{u^n e^{au}}{a} - \frac{n}{a} \int u^{n-1} e^{au} \, du \quad (n \geq 1)$$

$$26. \int \frac{du}{\sqrt{u^2 \pm a^2}} = \ln \left| u + \sqrt{u^2 \pm a^2} \right| + C$$

$$35. \int u^n \ln^m u \, du = \frac{u^{n+1}}{n+1} \ln^m u - \frac{m}{n+1} \int u^n \ln^{m-1} u \, du \quad (m, n \neq -1)$$

$$27. \int \frac{du}{u \sqrt{u^2 + a^2}} = \frac{1}{a} \ln \left| \frac{\sqrt{u^2 + a^2} - a}{u} \right| + C \quad (a > 0)$$

$$36. \int (\ln u)^n \, du = u (\ln u)^n - n \int (\ln u)^{n-1} \, du$$

$$28. \int \frac{u^2 \, du}{\sqrt{u^2 \pm a^2}} = \frac{1}{2} \left(u \sqrt{u^2 \pm a^2} \mp a^2 \ln \left| u + \sqrt{u^2 \pm a^2} \right| \right) + C$$

$$37. \int \frac{du}{a + be^{cu}} = \frac{1}{ac} (cu - \ln |a + be^{cu}|) + C$$

$$29. \int \frac{du}{u^2 \sqrt{u^2 \pm a^2}} = \mp \frac{\sqrt{u^2 \pm a^2}}{a^2 u} + C$$

$$38. \int \sqrt{\frac{a+u}{b+u}} \, du = \sqrt{(a+u)(b+u)} + (a-b) \ln \left(\sqrt{a+u} + \sqrt{b+u} \right) + C$$

$$30. \int \frac{du}{(a^2 - u^2)^{3/2}} = \frac{u}{a^2 \sqrt{a^2 - u^2}} + C$$

$$39. \int \frac{du}{\sqrt{(a+u)(b+u)}} = \ln \left| \frac{a+b}{2} + u + \sqrt{(a+u)(b+u)} \right| + C$$

$$40. \int \sqrt{a + bu + cu^2} \, du = \frac{2cu + b}{4c} \sqrt{a + bu + cu^2} - \frac{b^2 - 4ac}{8c^{3/2}} \ln \left| 2cu + b + 2\sqrt{c} \sqrt{a + bu + cu^2} \right| + C \quad (c > 0)$$

$$41. \int \frac{du}{u^2 + a^2} = \frac{1}{a} \tan^{-1} \left(\frac{u}{a} \right) + C \quad (a > 0)$$

$$42. \int \frac{du}{\sqrt{a^2 - u^2}} = \sin^{-1} \left(\frac{u}{a} \right) + C \quad (a > 0)$$

$$43. \int \frac{du}{u \sqrt{u^2 - a^2}} = \frac{1}{a} \sec^{-1} \left| \frac{u}{a} \right| + C \quad (a > 0)$$