

1.  $\int (\sin^{-1} x) dx = (\sin^{-1} x)^2 x + 2 \sin^{-1} x \sqrt{1 - x^2} - 2x + C.$
2.  $\int x \sin^{-1} x dx = \left(\frac{1}{2}x^2 - \frac{1}{4}\right) \sin^{-1} x + \frac{1}{4}x\sqrt{1 - x^2} + C.$
3.  $\int \sin^{-1} \sqrt{x} dx = 2 \int u \sin^{-1} u du = \left(x - \frac{1}{2}\right) \sin^{-1} \sqrt{x} + \frac{1}{2}\sqrt{x}\sqrt{1 - x} + C.$
4.  $\int \frac{1}{1 - \tan^2 x} dx = \frac{1}{4} (\ln |\sec 2x + \tan 2x| + 2x) + C.$
5.  $\int \ln(\sqrt{x} + \sqrt{x+1}) dx = \left(x + \frac{1}{2}\right) \ln(\sqrt{x} + \sqrt{x+1}) - \frac{1}{2}\sqrt{x^2 + x} + C.$
6.  $\int \frac{1}{x - \sqrt{1 - x^2}} dx = \frac{1}{4} \ln |1 + 2x\sqrt{1 - x^2}| + \frac{1}{2} \sin^{-1} x + C.$
7.  $\int \frac{2e^{2x} - e^x}{\sqrt{3e^{2x} - 6e^x - 1}} dx = \frac{2}{3}\sqrt{3e^{2x} - 6e^x - 1} + \frac{1}{\sqrt{3}} \ln |\sqrt{3}(e^x - 1) + \sqrt{3e^{2x} - 6e^x - 1}| + C.$
8.  $\int \frac{1}{x^6 - 1} dx = \frac{1}{12} \ln \left( \frac{(x-1)^2 |x^2 - x + 1|}{(x+1)^2 |x^2 + x + 1|} \right) - \frac{1}{2\sqrt{3}} \tan^{-1} \left( \frac{\sqrt{3}x}{2 - 2x^2} \right) + C.$
9.  $\int \frac{1}{x^4 + 4} dx = \frac{1}{16} \ln \left( \frac{|x^2 + 2x + 2|}{|x^2 - 2x + 2|} \right) + \frac{1}{8} \tan^{-1} \left( \frac{2x}{2 - x^2} \right) + C.$
10.  $\int \frac{1}{x(x+1)(x+2)\cdots(x+n)} dx = \frac{1}{n!} \sum_{k=0}^n \binom{n}{k} (-1)^k \ln |x+k| + C.$