3. Bảng các tích phân cơ bản (các nguyên hàm cơ bản- C , k là các hằng số)

1) $\int kdx = kx + C \quad , \quad k = const$

2) $\int x^k dx = \frac{x^{k+1}}{k+1} + C \text{ ,k} \neq -1$

3) $\int \frac{dx}{x+k} = \ln|x+k| + C$

4) $\int e^{kx} dx = \frac{e^{kx}}{k} + C \text{ , k} \neq 0$

5) $\int a^{kx} dx = \frac{a^{kx}}{k \ln a} + C \text{ , } 1 \neq a > 0, k \neq 0$

6) $\int \cos kx dx = \frac{1}{k} \sin kx + C$

7) $\int \sin kx dx = -\frac{1}{k} \cos kx + C$

8) $\int \frac{dx}{\sin^2 x} = -\cot x + C$

9) $\int \frac{dx}{\cos^2 x} = \tan x + C$

10) $\int \frac{dx}{\sin x} = \ln\left|tg\frac{x}{2}\right| + C$

11) $\int \frac{dx}{\cos x} = \ln\left|tg(\frac{x}{2} + \frac{\pi}{4})\right| + C$

12) $\int \frac{dx}{\sqrt{x^2 \pm k}} = \ln\left|x + \sqrt{x^2 \pm k}\right| + C \text{ , k} \neq 0$

13) $\int \frac{dx}{x^2 - k^2} = \frac{1}{2k} \ln\left|\frac{x-k}{x+k}\right| + C \text{ , k} \neq 0$

14) $\int \frac{dx}{\sqrt{k^2 - x^2}} = \arcsin\frac{x}{k} + C \quad k \neq 0$

15) $\int \frac{dx}{x^2 + k^2} = \frac{1}{k} arctg\frac{x}{k} + C \text{ , k} \neq 0$

16) $\int \sqrt{k^2 - x^2} dx = \frac{x}{2}\sqrt{k^2 - x^2} + \frac{k^2}{2} \arcsin\frac{x}{k} + C$

17) $\int \frac{u'(x)dx}{u(x)} = \ln|u(x)| + C$

18) $\int \frac{dx}{2\sqrt{x}} = \sqrt{x} + C$

19) $\int \frac{u'(x)dx}{2\sqrt{u(x)}} = \sqrt{u(x)} + C$

20) $\int \sqrt{x^2 \pm k^2} dx = \frac{x}{2}\sqrt{x^2 \pm k^2} \pm$

$\pm \frac{k^2}{2} \ln\left|x + \sqrt{x^2 \pm k^2}\right| + C$