Matthias Buchhorn buchhorn@fhtw-berlin.de

Bestimmte Integrale

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} \qquad n!=-1$$

$$\int \frac{1}{x} dx = \ln|x| \qquad n!=-1 \qquad a!=0$$

$$\int (ax+b)^n dx = \frac{1}{(n+1)a} * (ax+b)^{n+1}$$

$$\int \frac{1}{ax+b} dx = \frac{1}{a} + \ln|ax+b| \qquad a!=0$$

$$\int \frac{x}{ax+b} dx = \frac{x}{a} - \frac{b}{a^2} \ln|ax+b| \qquad a!=0$$

$$\int \frac{x}{(ax+b)^2} dx = \frac{b}{a^2} * \frac{1}{ax+b} + \frac{1}{a^2} \qquad a!=0$$

$$\int x(ax+b)^n dx = \frac{1}{(n+2)a^2}(ax+b)^{n+1} - \frac{b}{(n+1)a^2}(ax+b)^{n+1} \qquad n!=-1 \; n!=-2 \; a!=0$$

$$\int \frac{1}{x}(ax+b)^n dx = \frac{1}{n}(ax+b)^n + b\int \frac{1}{x}(ax+b)^{n-1} dx \qquad n>0$$

$$\int \frac{1}{x(ax+b)} dx = -\frac{1}{b} + \ln\left|\frac{ax+b}{x}\right| \qquad b!=0$$

$$\int \frac{1}{x(ax+b)^n} dx = \frac{1}{(n-1)b} * \frac{1}{(ax+b)^{n-1}} + \frac{1}{b}\int \frac{1}{x(ax+b)^{n-1}} dx \qquad n>0 \quad n!=0 \quad b!=0$$

$$\int \frac{ax+b}{cx+d} dx = \frac{a}{c}x + \frac{bc-ad}{c^2} * \ln|cx+d| \qquad c!=0$$

$$\int \frac{1}{/\,ax+b)(cx+d)} dx = \begin{array}{l} \xrightarrow{bc-ad!=0} \frac{1}{bc-ad} \ln\left|\frac{cx+d}{ax+b}\right| \\ \xrightarrow{bc-ad=0} -\frac{1}{c} * \frac{1}{ax+b} \end{array}$$

$$\int \frac{x}{/\,ax+b)(cx+d)} dx = \begin{array}{l} \xrightarrow{bc-ad!=0} \frac{1}{bc-ad} * \left(\frac{b}{a}\ln|ax+b| * \frac{d}{c}\ln|cx+d|\right) \\ \xrightarrow{bc-ad=0\_\_ac!=0} -\frac{1}{ac} * \ln\left|ax+b+\frac{b}{ac}\right| * \frac{1}{ax+b} \end{array}$$