$$\int \frac{dx}{\sqrt[5]{x^6}} = \int \frac{dx}{x^{\frac{6}{5}}} = \int x^{-\frac{6}{5}} dx = \frac{x^{-\frac{6}{5}+1} + C}{-\frac{6}{5}+1}$$

$$= \frac{x^{-\frac{1}{5}} + C}{-\frac{1}{5}} = -\frac{x^{-\frac{1}{5}} + C}{\frac{1}{5}} = -\frac{5}{x^{\frac{1}{5}}} + C$$

$$= -\frac{5}{\sqrt[5]{x}} + C$$

$$\frac{\frac{2}{3}}{\frac{4}{5}} = \frac{2.5}{3.4} = \frac{10}{12} = \frac{5}{6}, \quad \frac{\frac{2}{3}}{5} = \frac{\frac{2}{3}}{\frac{5}{1}} = \frac{2.1}{3.5}, \quad \frac{2}{\frac{3}{5}} = \frac{\frac{2}{1}}{\frac{3}{5}} = \frac{2.5}{1.3} = 10/$$

Type equation here.

3а) $\int (x+1)^2\, dx = \int (x+1)^2\, d(x+1) = \frac{(x+1)^3}{3} + 1$

3б) $\int \frac{dx}{2x+3} = \frac{1}{2} \int \frac{d2x}{2x+3} = \frac{1}{2} \int \frac{d(2x+3)}{2x+3} = \frac{1}{2} \ln|2x+3| + C$

3в) $\int \frac{3x+1}{3x+2} dx = \int \frac{3x+1+1-1}{3x+2} dx = \int \frac{3x+2-1}{3x+2} dx$

$$= \int \frac{(3x+2)-1}{3x+2} dx$$

$$= \int \left(\frac{3x+2}{3x+2} - \frac{1}{3x+2}\right) dx$$

$$= \int \left(1 - \frac{1}{3x+2}\right) dx = \int dx - \int \frac{dx}{3x+2}$$

$$= x - \frac{1}{3}\int \frac{d3x}{3x+2} = x - \frac{1}{3}\int \frac{d(3x+2)}{3x+2}$$

$$= x - \frac{1}{3}\ln|3x+2| + C.$$

ЦЯЛАТА

3в) $\int \frac{3x+1}{3x+2}dx = \int \frac{3x+1+1-1}{3x+2}dx = \int \frac{3x+2-1}{3x+2}dx$

$$= \int \frac{(3x+2)-1}{3x+2}dx$$

$$= \int \left(\frac{3x+2}{3x+2} - \frac{1}{3x+2}\right)dx$$

$$= \int \left(1 - \frac{1}{3x+2}\right)dx = \int dx - \int \frac{dx}{3x+2}$$

$$= x - \frac{1}{3}\int \frac{d3x}{3x+2} = x - \frac{1}{3}\int \frac{d(3x+2)}{3x+2}$$

$$= x - \frac{1}{3}\ln|3x+2| + C.$$

Формула 1.3.1 се нарича формула за интегриране по части. Тази формула се прилага за решаване на следните групи интеграли:

$$(i)\int P_n(x)\begin{cases} e^{ax} \\ \sin bx \\ \cos bx \end{cases} dx, \qquad (ii)\int P_n(x)\ln x\,dx,$$

$$(iii)\int P_n(x)\begin{cases} \arcsin x \\ \arccos x \\ \operatorname{arctg} x \\ \operatorname{arcctg} x \end{cases} dx, \quad (iv)\int e^{ax}\begin{cases} \sin bx \\ \cos bx \end{cases} dx,$$

$$\int u\,dv = uv - \int v\,du$$

$$u = \ln x\,,\, v = x^2$$

$$\int x\,dx = \frac{x^2}{2} + C$$

$$\int x \ln x\,dx = \int \ln x\, d\frac{x^2}{2} = \frac{1}{2}\int \ln x\,dx^2 =$$

$$= \frac{1}{2}\left(x^2\ln x - \int x^2\,d\ln x\right) = \frac{1}{2}x^2\ln x - \frac{1}{2}\int x^2\,d\ln x$$

$$= \frac{1}{2}x^2\ln x - \frac{1}{2}\int x^2(\ln x)'\,dx$$

$$= \frac{1}{2}x^2\ln x - \frac{1}{2}\int x^2\frac{1}{x}dx = \frac{1}{2}x^2\ln x - \frac{1}{2}\int x\,dx$$

$$\int u\,dv = uv - \int v\,du$$

$$u = \ln x\,, v = x^2$$

$$\int x\,dx = \frac{x^2}{2} + C$$

$$\int x \ln x\,dx = \int \ln x\,d\frac{x^2}{2} = \frac{1}{2}\int \ln x\,dx^2 =$$

$$= \frac{1}{2}\left(x^2 \ln x - \int x^2\,d\ln x\right) = \frac{1}{2}x^2 \ln x - \frac{1}{2}\int x^2\,d\ln x$$

$$= \frac{1}{2}x^2 \ln x - \frac{1}{2}\int x^2 (\ln x)'\,dx$$

$$= \frac{1}{2}x^2 \ln x - \frac{1}{2}\int x^2 \frac{1}{x}\,dx = \frac{1}{2}x^2 \ln x - \frac{1}{2}\int x\,dx$$

$$= \frac{1}{2}x^2 \ln x - \frac{x^2}{2} + C$$