

$$\int x^3 \ln^2 x \, dx$$

$$\begin{aligned} \int x^3 \ln^2 x \, dx &= \ln^2 x \cdot x^4/4 - \int (x^4/4) \cdot 2 \ln x \, dx/x \\ &= \ln^2 x \cdot x^4/4 - 1/2 \int x^3 \ln x \, dx = \\ &= \ln^2 x \cdot x^4/4 - 1/2 (x^4/4 \ln x - x^4/16) + C = \\ &= \ln^2 x \cdot x^4/4 - x^4/8 \ln x + x^4/32 + C \end{aligned}$$

$$\begin{aligned} u &= \ln^2 x \\ dv &= x^3 dx \\ v &= x^4/4 \\ du &= 2 \ln x \, dx/x \end{aligned}$$

$$\begin{aligned} \int x^3 \ln x \, dx &= x^4/4 \ln x - \int (x^4/4) \cdot dx/x = \\ &= x^4/4 \ln x - 1/4 \int x^3 \, dx = \\ &= x^4/4 \ln x - 1/4 \cdot x^4/4 + C = x^4/4 \ln x - x^4/16 \\ u &= \ln x \\ dv &= x^3 dx \\ v &= x^4/4 \\ du &= dx/x \end{aligned}$$

Фихтенгольц 3 тома

Ландау, Лифшиц 7 тома

Фейнмановские лекции

Зорич

Раппопорт Эрнест
Ошерович