$$\int x^p \log^q x = [\frac{x^{p+}}{p+}\log^q x] - \int \frac{x^{p+}}{p+}\frac{q\log^{q-} x}{x} = \frac{1}{p+}[x^{p+}\log^q x] - \frac{q}{p^+}\int x^{p+}\log^{q-} x$$

$$\int x \sqrt[5]{2x-3}$$

$$\int_0^1 x^2\, e^x : \quad \int_0^\infty x^2\, e^{-x}$$

$$\int_{-\pi}^{\pi} x\cos x : \quad \int_0^{\pi} x\cos x : \quad \int x^2 \cos x : \quad \int_0^1 x\,{}^x\overset{-1}{\tan}$$

$$\text{uneig} \int_0^1 {}^x\log : \quad \int_0^1 {}^x\log^2 = 2$$

$$\int {}^x\log^2 = \int \underline{x}\,{}^x\log^2 = x\,{}^x\log^2 - 2\int x\frac{{}^x\log}{x} = x\,{}^x\log^2 - 2\int {}^x\log$$

$$= x\,{}^x\log^2 - 2\int \underline{x}\,{}^x\log = x\,{}^x\log^2 - 2x\,{}^x\log + 2\int 1 = x\,{}^x\log^2 - 2x\,{}^x\log + 2x$$

$$\alpha > 0 \Longrightarrow \frac{{}^t\log}{t^\alpha} \underset{t \rightsquigarrow \infty}{\rightsquigarrow} 0 : \quad {}^{1/t}\log = -{}^t\log$$

$$\int_{0+}^1 {}^x\log^2 = x\,{}^x\log^2 - 2x\,{}^x\log + 2x\Big|_\varepsilon^1 = 2 - \varepsilon\,{}^\varepsilon\log^2 + 2\varepsilon\,{}^\varepsilon\log - 2\varepsilon = 2 + \frac{{}^t\log^2}{t} - 2\frac{{}^t\log}{t} - \frac{2}{t} \rightsquigarrow 2$$

$$\int_1^b e^{\sqrt{x}}$$

$$\int_1^\infty \frac{{}^x\log}{x^2} : \quad \int_0^\infty \frac{{}^{1+x^2}\log}{x^2}$$

$$\mathbb{R} \xrightarrow[\text{stet}]{\text{ɿ}} \mathbb{R} \Longrightarrow \int_{dt}^{0|x} (x-t)\ {}^{t}\text{ɿ} = \int_{du}^{0|x} \int_{dt}^{0|u} {}^{t}\text{ɿ}$$

$$n > 1\colon \quad \int_{1}^{\infty-} \frac{\log x}{x^n} = \frac{1}{(n-1)^2}$$

$$\int \frac{\log x}{x^n} = \int x^{-n} \log x = \int \frac{d}{dx} \frac{x^{1-n}}{1-n} \log x = \frac{x^{1-n}}{1-n} \log x - \int \frac{x^{1-n}}{1-n} \frac{d}{dx} \log x$$

$$= \frac{x^{1-n}}{1-n} \log x - \int \frac{x^{-n}}{1-n} = \frac{x^{1-n}}{1-n} \log x - \frac{x^{1-n}}{(1-n)^2} \frac{\infty}{1} = \frac{1}{(n-1)^2}$$

$$\int_{1}^{2} x^3 \log x\colon \quad \int_{0}^{1} \frac{x}{\left(x^2+1\right)^3}\colon \quad \int_{0}^{\pi} e^x \sin x\colon \quad \int_{0}^{2} \frac{x}{x^2-3x-4}\colon \quad \int_{0}^{1} \frac{2x+3}{x^2+4}\colon \quad \int_{0}^{1} \frac{1}{x^3+1}$$

$$\int_{0}^{\infty-} x\, e^{-x^2}\colon \quad \int_{1+}^{2-} \frac{1}{x^2-3x+2}$$