$$\frac{P(x)}{Q(x)} \qquad\qquad \begin{array}{l|l} P(x) & Q(x) \\ \hline & \end{array}$$

$$N(x) + \frac{P'(x)}{Q(x)}$$

$$\frac{x}{x+6} \qquad\qquad \begin{array}{r|l} x & x+6 \\ \cline{2-2} \underline{x+6} & 1 \\ -6 & \end{array}$$

$$x = x+6 - 6$$

$$\boxed{\frac{x}{x+6}} = \boxed{1} - \boxed{\frac{6}{x+6}}$$

$$N(x) + \frac{P'(x)}{Q(x)}$$

$$\int \frac{x}{x+6}\, dx = \int \frac{x+6 - 6}{x+6}\, dx$$

$$= \int \left(1 - \frac{6}{x+6}\right) dx$$

$$= \int 1\, dx - 6 \int \frac{1}{x+6}\, dx$$

$$(x+6)' = 1$$

$$= x - 6 \ln|x+6| + C$$

$$\int \frac{1}{t}\, dt = \ln(t) + C$$

$$\log_2(x\cdot y) = \log_2(x) + \log_2(y)$$

$$\log_2\left(\frac{x}{y}\right) = \log_2(x) - \log_2(y)$$

$$\log_2(x^s) = s\,\log_2(x)$$

$$x = t^2 - 2 \Rightarrow dx = (t^2-2)'\,dt$$

$$= 2t\,dt$$

$$f(g(x))\cdot g'(x)$$

$\sin^2 x = 1-\cos^2 x$ car $\sin^2 x + \cos^2 x = 1$

$$\sin^3 x\,\cos^2 x = \sin x\cdot(1-\cos^2 x)\,\cos^2 x$$

$$(\sin^3 x)' = 3\sin^2 x\cdot\cos x$$

$$= \cos^2 x\,\sin x - \cos^4 x\,\sin x$$

$$= -\cos^2 x\,(-\sin x) + \cos^4 x\cdot(-\sin x)$$

$$\Rightarrow \int \sin^3 x \cos^2 x \, dx = -\frac{1}{3}\cos^3 x + \frac{1}{5}\cos^5 x + c$$

$$\left(\frac{1}{3}\cos^3 x\right)' = \frac{1}{3} \cdot 3 \cdot \cos^2 x \cdot (\cos x)'$$

$$= \cos^2 x \cdot (-\sin x)$$

$$= -\cos^2 x \sin x$$