Stavun Vlajio

6.105a) $\int \frac{\ln(x)}{x} dx = \ln(x) \cdot \ln(x) - \int \frac{\ln(x)}{x} | + \int \frac{\ln(x)}{x} | : 2$

$u = \ln(x)$ $u' = \frac{1}{x}$
$v' = \frac{1}{x}$ $v = \ln(x)$

$\underbrace{\ln^2(x)}$

$= \frac{\ln^2(x)}{2} + C$

6.105d) $\overset{u'}{\int 2x} \cdot \overset{u}{\ln(x)} dx = x^2 \cdot \ln(x) - \left(\int \frac{1}{x} \cdot x^2 dx = \int \frac{x}{u} dx \right)$

$v' = 2x$ $v = \mathbb{Z} \cdot \frac{x^2}{\mathbb{Z}}$ $\frac{x^2}{2}$

$u = \ln(x)$

$u' = \frac{1}{x}$ $= x^2 \cdot \ln(x) - \frac{x^2}{2} + C$

6.106a) $\cos^2(x) = 1 - \sin^2(x)$

$\int \sin(t) \cdot \cos(t) dt = \sin^2(t) - \int \cos(t) \cdot \sin(t) dt$

$u = \sin(t)$ $u' = \cos(t)$ $\int \sin(t) \cdot \cos(t) = \sin^2(t) - \int \cos(t) \cdot \sin(t) | - \int(...) : 2$
$v' = \cos(t)$ $v = \sin(t)$

$= \frac{\sin^2(t)}{2} + C$

6.106c) $\int e^x \cdot \sin(x) dx = e^x \cdot \sin(x) - \int \cos(x) \cdot e^x dx$

$u = \sin(x)$ $u' = \cos(x)$
$v' = e^x$ $v = e^x$

$u = \cos(x)$ $u' = -\sin(x)$
$v' = e^x$ $v = e^x$

$e^x \cdot \sin(x) - \left(\cos(x) e^x + \left(\int -\sin(x) \cdot e^x dx \right) \right)$

$\int e^x \sin(x) dx = e^x \cdot \sin(x) - \cos(x) e^x - \int \sin(x) \cdot e^x dx |$

$\int e^x \cdot \sin(x) + \int \sin(x) \cdot e^x = e^x \cdot \sin(x) - \cos(x) e^x$

$\int e^x \cdot \sin(x) = \frac{e^x \cdot \sin(x)}{2} - \frac{e^x \cdot \cos(x)}{2} + C$