① $\int_0^{\pi} (5e^x + 3 \operatorname{sen} x)\, dx$

$5\int e^x + 3\int \operatorname{sen} x$

$5\int e^x + c + 3\int -\cos x + c$

$(5e^0 + c + 3\cos 0)(5e^{\pi} + c - 3(\cos \pi))$

$= 112.1079717$

① $\int_1^4 \left(\frac{4+6u}{\sqrt{u}}\right) du$

$\int_1^4 4+6u\,(u)^{1/2}\, du$

$4\int 6u \quad \frac{u^{1/2+1}}{\frac{1}{2}+1}$

$6\frac{u^2}{2}$

$4(3u^2) \quad \frac{u^{1/2}}{\frac{1}{2}} = 12u^2\left(\frac{u^{1/2}}{\frac{1}{2}}\right) -$

$12u^2$

$\rightarrow 12(4)^2\left(\frac{4^{1/2}}{\frac{1}{2}}\right) + 12(1)^2(\dots$

$24 + 768 = 792$

) $\int (1 + \tan^2\alpha)\, d\alpha \qquad 1 + \tan^2(x) = \sec^2(x)$

$\int \sec^2(\alpha)\, d\alpha = \tan(\alpha)$

$= \tan(\alpha) + C$

) $\int_1^{18} \sqrt{\frac{3}{z}}\, dz$

$\int_1^{18} \left(\frac{3}{z}\right)^{1/2} \quad \frac{\left(\frac{3}{2}\right)^{1/2+1}}{\frac{1}{2}+1} - \frac{\left(\frac{3}{2}\right)^{3/2}}{\frac{3}{2}}$

① $\frac{1.7320}{\frac{3}{2}} = 1.1547$

② $\frac{0.0680}{\frac{3}{2}}$

0.0453

$0.0453 + 1.1547 = 1.2000$

(5) $\int e^{\tan x} \sec^2 x \, dx$

$= \int e^u \, du = e^u$

$e^{\tan x} = \underbrace{e^{\tan(x)} + c}$