

④ cont...

$$\left[ \frac{u^2}{2} - 4u + 4\ln|u| - \ln|x-2| \right]_3^4$$

$$\left[ \frac{(x-2)^2}{2} + 4(x-2) + 4\ln|x-2| - \ln|x-2| \right]_3^4$$

$$\left[ \frac{(4-2)^2}{2} + 4(4-2) + 4\ln|4-2| - \ln|2| \right] - \left[ \frac{(3-2)^2}{2} + 4(3-2) + 4\ln|3-2| - \ln|1| \right]$$

$$2 + 8 + 4\ln 2 - \ln 2 - \frac{1}{2} + 4$$

$$13.5 + 3\ln 2$$

⑨  $\int_0^8 \frac{dx}{\sqrt{1+x}}$   $u=1+x$   
 $du=dx$

$$\int u^{-1/2} du$$

$$\left[ \frac{2u^{1/2}}{2\sqrt{1+x}} \right]_0^8$$

$$2\sqrt{9} - 2\sqrt{1}$$

$$\boxed{4}$$

⑩  $\int_{\pi/4}^{\pi/2} \cot x \, dx$

$$\int_{\pi/4}^{\pi/2} \frac{\cos x}{\sin x} \, dx \quad u=\sin x$$

$$du = \cos x \, dx$$

$$\int \frac{1}{u} du$$

$$\left[ \ln|\sin x| \right]_{\pi/4}^{\pi/2}$$

$$\ln|\sin \pi/2| - \ln|\sin \pi/4|$$

$$\boxed{-\ln \frac{\sqrt{2}}{2}}$$