$$4\left[\int U^2(U^2-1)\,dU\right] \Leftrightarrow 4\cdot\left[\int (U^4-U^2)\,dU\right]$$

$$4\cdot\left[\int U^4\,dU-\int U^2\,dU\right] \qquad \int x^n=\frac{x^{n+1}}{n+1}$$

$$4\cdot\left[\frac{U^5}{5}-\frac{U^3}{3}\right]+C \qquad U^2=1+\sqrt{x}$$

$$U=\sqrt{1+\sqrt{x}}$$

$$\frac{4}{6}\cdot U^5-\frac{4}{3}\cdot U^3$$

$$\boxed{\frac{4}{6}\cdot\left(\sqrt{1+\sqrt{x}}\right)^5-\frac{4}{3}\cdot\left(\sqrt{1+\sqrt{x}}\right)^3 + C}$$

$$\int \frac{\ln(2x)}{x ln(4x)}\,dx$$

$$\int \sqrt{1+\sqrt{x}}\,dx$$

$$\int \frac{\ln(2x)}{x ln(4x)}\,dx$$

$$\int \frac{\ln(2)+\ln(x)}{x\cdot \ln(4)+\ln(x)}\,dx$$

$$U=\ln(x)$$

$$dU=\frac{1}{x}\,dx$$

$$\int \frac{\ln(2)+\ln(x)}{\ln(4)+\ln(x)}\cdot\frac{1}{x}\,dx$$

$$\int \frac{\ln(2)+U}{\ln(4)+U}\,dU$$

$$\int \frac{\ln(2)}{\ln(4)+U}\,dU+\int\frac{U}{\ln(4)+U}\,dU$$

$$W=\ln(4)+U \qquad W-\ln(4)=U$$

$$dW=dU$$

$$\int \frac{\ln(2)}{W}\,dW+\int\frac{W-\ln(4)}{W}\,dW$$

$$\int \frac{1}{x}\,dx=\ln|x|$$

$$\ln(2)\left\{\int\frac{1}{W}\,dW\right\}+\int\frac{W-\ln(4)}{W}\,dW$$

$$\ln(2)\cdot\ln|W|+\int\frac{W}{W}\,dW-\int\frac{\ln(4)}{W}\,dW$$

$$\ln(2)\cdot\ln|W|+\int 1\,dW-\ln(4)\int\frac{1}{W}\,dW$$

$$\ln(2)\cdot\ln|W|+W-\ln(4)\cdot\ln|W|+C$$

$$W=\ln(4)+U$$

$$W=\ln(4)+\ln(x)=\ln(4x)$$

$$\boxed{\ln(2)\cdot\ln|\ln(4x)|+\ln(4x)-\ln(4)\cdot\ln|\ln(4x)|+C}$$

$$\int \sqrt{1+\sqrt{x}}\,dx \qquad \sqrt{x^2}=|x| \;=x$$

$$U^2=1+\sqrt{x} \Rightarrow U^2-1=\sqrt{x}$$

$$2U\,dU=\frac{1}{2\sqrt{x}}\,dx \;/\cdot 2$$

$$4U\,dU=\cancel{2}\cdot\frac{1}{\cancel{2}\sqrt{x}}\,dx$$

$$4U\,dU=\frac{1}{\sqrt{x}}\,dx \;/\cdot\sqrt{x}$$

$$4U\,dU\cdot\sqrt{x}=\cancel{\sqrt{x}}\cdot\frac{1}{\cancel{\sqrt{x}}}\,dx$$

$$4U\,dU\cdot\sqrt{x}=dx$$

$$4U\,dU\cdot(U^2-1)=dx$$

$$\int\sqrt{U^2}\;4U\,dU\cdot(U^2-1)$$

$$\int U\cdot 4U\,dU\cdot(U^2-1)=\int 4U^2(U^2-1)\,dU$$

$$4\left[\int U^2(U^2-1)\,dU\right] \Leftrightarrow 4\cdot\left[\int (U^4-U^2)\,dU\right]$$