13.12

onsdag 21 december 2022 20:37

a) $\int_1^{\arcsin x} \frac{\sin t}{t}\,dt = T'(x) = S'(\arcsin x)\cdot D\arcsin x = \frac{x}{\arcsin x}\cdot\frac{1}{\sqrt{1-x^2}} = \frac{x}{\arcsin(x)\sqrt{1-x^2}}$

b) $\int_{1/2}^{\ln x} \frac{e^{2t}}{t}\,dt = T'(x) = S'(\ln x)\cdot D\ln x = \frac{x^2}{\ln x}\cdot\frac{1}{x} = \frac{x}{\ln x}$

c) $-\int_1^{\cos x} \sqrt{1-t^2}\,dt = -T'(x) = -S'(\cos x)\cdot D\cos x = -\sqrt{\sin^2 x}\cdot(-\sin x) = \sin^2 x$

d) $\int_{\cos x}^{\sin x} \sqrt{1-t^2}\,dt = \int_{\cos x}^{1} \sqrt{1-t^2}\,dt + \int_1^{\sin x} \sqrt{1-t^2}\,dt = \sin^2 x + \cos^2 x = 1$

$-\int_1^{\cos x} \sqrt{1-t^2}\,dt = \ldots$ c) $\ldots = \sin^2 x$

$\int_1^{\sin x} \sqrt{1-t^2}\,dt = T'(x) = S'(\sin x)\cdot D\sin x = \cos x\cdot\cos x = \cos^2 x$