Aufgaben

Integration (*Teil 1*)

Hinweise:
1. ggf. Additionstheoreme (Mathe1) wiederholen
2. alle Integranden lassen sich in eine der „Überschrift“ entsprechende Form überführen!!!
3. führen Sie stets die Probe durch – d.h. differenzieren!

Bitte verzeiht die etwas „verrückten“ Variablen – ich war etwas unkonzentriert ;-)

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$\int f(at+b)$

① $F(x) := \int_0^x \frac{e^{t^2+t}}{e^{t^2+1}}\,dt$

② $F(x) := \int_0^x \frac{\sqrt{e^{4t-8}}}{e^{4t+4}}\,dt$

③ $F(x) := \int_0^x \sqrt{1-\cos^2(3t+1)}\,dt$

④ $F(x) := \int_0^x \frac{\cot(t-1)}{\sqrt{1+\cot^2(t-1)}}\,dt$

⑤ $F(x) := \int_0^x [\cos^2(t-1) - \sin^2(t-1)]\,dt$

⑥ $F(x) := \int_{0{,}25\pi}^x \frac{dt}{\cos^2(t+\frac{\pi}{2}) - \cos(2t+\pi)}$

$$\boxed{\int \frac{f'(t)}{f(t)}}$$

① $$F(x) := \int_0^x \frac{3t^2 - 10t + 6}{t^3 - 5t^2 + 6t - 8}\, dt$$

② $$F(x) := \int_{1/3}^x \frac{t^{-2}}{4 - \frac{1}{t}}\, dt$$

③ $$F(x) := \int_1^x \frac{\sqrt{t}}{2 - \sqrt{t^3}}\, dt$$

④ $$F(x) := \int_0^x \frac{e^t - e^{-t}}{e^t + e^{-t}}\, dt$$

⑤ $$F(x) := \int_1^x \frac{dt}{\sinh^2(t) \cdot \coth(t)}$$

⑥ $$F(x) := \int_0^x \frac{dt}{\sqrt[3]{t^2} \cdot (c - b \cdot \sqrt[3]{t})} \quad ; b \neq 0$$

$$\boxed{\int [f(t)]^n \cdot f'(t)}$$

① $$F(x) := \int_0^x \frac{t}{\sqrt{1+t^2}}\, dt$$

② $$F(x) := \int_0^x \frac{\sqrt{t}}{\left(a+\sqrt{t^3}\right)^2}\, dt$$

③ $$F(x) := \int_a^x \frac{\left(\frac{a}{t}+2b\right)^2}{t^2}\, dt$$

④ $$F(\text{[redacted]}) := \int_0^{\text{[redacted]}} \left[x^2 \cdot \sqrt[3]{x^3-1}\right] dx$$

⑤ $$F(x) := \int_0^x \frac{\tan^3(t)}{\cos^2(t)}\, dt$$

⑥ $$F(x) := \int_0^x \left[\sqrt[7]{e^t+13} \cdot e^t\right] dt$$

$$\boxed{\int g[f(x)] \cdot f'(x)}$$

① $$F(x) := \int_0^x \left[(t+1) \cdot \sin\left(t^2 + 2t\right) \right] dt$$

② $$F(x) := \int_0^x \left[\text{[redacted]} \cdot \sin\left(\frac{6\,\text{[redacted]}^4 - 2\,\text{[redacted]}^2}{\text{[redacted]}^2} \right) \right] d\,\text{[redacted]}$$

③ $$F(x) := \int_0^x \left[4t \cdot \sin\left(\frac{2 + t^2}{4} \right) \right] dt$$

④ $$F(x) := \int_0^x \left[t \cdot \sinh\left(\frac{t^4 - 1}{t^2 + 1} \right) \right] dt$$

⑤ $$F(x) := \int_0^x \left[t \cdot \cosh\left(1 + \frac{1}{t} \right) \right] dt$$

⑥ $$F(x) := \int_0^x \left[\frac{1}{2\sqrt{t}} \cdot \cos(\sqrt{t}) \right] dt$$

GEMISCHT (Spaßaufgaben)

① $$F(x) := \int_0^x \frac{\arcsin(t)}{\sqrt{1-t^2}}\, dt$$

② $$F(x) := \int_0^x \left[2t\cos(t^2) \cdot e^{\sin(t^2)} \right] dt$$

③ $$F(x) := \int_1^x \frac{\ln\left(\frac{1}{t^2}\right)}{t}\, dt$$

④ $$F(x) := \int_{1\text{[redacted]}}^{x} \frac{e^{j\arctan(\text{[redacted]})}}{1+\text{[redacted]}^2}\, d\text{[redacted]}$$

⑤ $$F(x) := \int_0^x \frac{dt}{\left(e^{\sqrt{t}}+1\right)\sqrt{t}}$$