

(1) [2] Compute $h'(x)$ where $h(x) = \int_0^{x^2} \sqrt{1+r^3} dr$.

(2) [3] Determine $\int x^2 e^{x^3} dx$.

(3) [5] Evaluate $\int_0^{\pi/2} \cos(x) \sin(\sin(x)) dx$.

(4) [5] Determine $\int t^5 \ln t dt$.