

Problem 1 *Compute the derivative.*

$$(a) \frac{d}{dx} \int_3^x e^{t^2-t} dt$$

$$(b) \frac{d}{dx} \int_x^\pi \sqrt{1 + \sec t} dt$$

$$(c) \frac{d}{dx} \int_{\cos x}^{\sin x} \ln(1 + 2v) dv$$

Problem 2 *State the definition of antiderivative. Be very precise.*

Problem 3 *For each part, write down a function f , its antiderivative F , and use F to compute the integral.*

(a) $\int_{-1}^2 (x^3 - 2x) dx$

(b) $\int_0^{\pi/4} (\sec^2 t) dt$

(c) $\int_0^2 (y - 1)(2y + 1) dy$