Math 101 – WORKSHEET 4 THE FUNDAMENTAL THEOREM OF CALCULUS

(1) (Differentiating integrals) Evaluate (a) $\frac{d}{dx} \int_0^x e^{t^2} dt$

(b)
$$\frac{\mathrm{d}}{\mathrm{d}x} \int_x^1 e^{t^2} \mathrm{d}t$$

(c) (Final 2009) $\frac{\mathrm{d}}{\mathrm{d}x} \int_{x^2}^{e^x} \sqrt{\cos t} \,\mathrm{d}t$

(d) (Final 2014) Let $f(x) = \int_1^x 100(t^2 - 3t + 2)e^{-t^2} dt$. Find the interval(s) on which f is increasing.

Date: 11/1/2017, Worksheet by Lior Silberman. This instructional material is excluded from the terms of UBC Policy 81.

(2) Evaluate using anti-derivatives (a) (Final 2012) $\int_1^2 \frac{x^2+2}{x^2} dx =$

(b) (Final 2007) $\int_{-1}^{0} (2x - e^x) dx =$

(c)
$$\int_{3}^{10} (x^{5/2} + e^{2x}) dx =$$