

Assignment 8 – All 3 parts – Math 243

Due: Wednesday, Mar. 17, 2017, at the beginning of class

Textbook exercises:¹

Section 12.1: 10, 12, 14, 16, 20, 22

Section 12.2: 2, 16

Other exercises:

(1) Evaluate the following.

(a) $\int (t^2 - 2, 1/t, -2) dt$

(b) $\int_0^1 (2\sqrt{t}, 1 - 2t, e^t) dt$

(2) A particle starts at the origin at time $t = 0$ and its velocity at time $t \geq 0$ is given by $\mathbf{v}(t) = (e^t - 1, -t, \sqrt{t})$. Determine its position $\mathbf{r}(t)$ at time t .

(3) Set up, but do not evaluate, the integral for the arc length of the curve $\mathbf{r}(t) = (t, t^2, t^3)$ for t varying from 1 to 3.

(4) Set up, but do not evaluate, the integral for the arc length of the curve $\mathbf{r}(t) = (\cos(t), e^{-t}, \sin(t))$ for t varying from 0 to π .

¹From Hass, Weir, and Thomas' *University calculus: alternate edition*