November 14,2012

QUIZ#3 Math102-sec12.

Net Time Allowed: 20 minutes

Name: ID #: Serial #:

Exercise1: (05pts)

Evaluate the integral: $I = \int_1^2 \frac{e^{\frac{3}{x}}}{x^2}\, dx.$

solution:

Let $u = \frac{3}{x}$ (01) $\Rightarrow du = -\frac{3}{x^2}dx$ so $\frac{dx}{x^2} = -\frac{1}{3}du$

IF $x = 1 \Rightarrow u = 3$ and IF $x = 2 \Rightarrow u = \frac{3}{2}$ (01)

Thus: $I = \int_3^{3/2} -\frac{1}{3}e^u du = \frac{1}{3}\int_{2/3}^{3} e^u du$ (02)

Hence $I = \frac{1}{3}\left[e^u\right]_{2/3}^{3} = \frac{1}{3}\left(e^3 - e^{\frac{3}{2}}\right)$ (01)

Exercise2: (05pts)

Evaluate the integral: $I = \int \sin^5(\frac{x}{3})\cos(\frac{x}{3})\, dx.$

solution:

Let $u = \sin(\frac{x}{3})$ (01) $\Rightarrow du = \frac{1}{3}\cos(\frac{x}{3})dx$

Therefore $I = 3\int u^5 du = \frac{3}{6}u^6 + C$ (02)

Hence $I = \frac{1}{2}\sin^6(\frac{x}{3}) + C$ (02)