Quiz Questions 7 for Mathematics 224
Introductory Analysis II - Spring 2001
Material Covered: Section 7.7 of workbook and text
For: Friday, 27th April

This is a 15 minute quiz, worth 5% and marked out of 5 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an $8\frac{1}{2}$ by 11 inch piece of paper may be used as a reference during this quiz. A calculator may also be used. No other aids are permitted.

Name (please print): _____ . **ID Number:** _____.
last first

---

1. [2 points] $\int_0^1 \int_{-1}^1 (x + 2y)\, dy\, dx =$ (circle closest one) **-2 / -1 / 0 / 1 / 2**

2. [3 points] Evaluate $\int_0^1 \int_0^{1-x^2} (1 - y - x^2)\, dy\, dx$

1. 1

$$\begin{aligned}\int_{-1}^{1}(x+2y)\,dy &= \Big[xy+y^2\Big]_{x=-1}^{1}\\ &= (x+1)-(-x+1)\\ &= 2x\end{aligned}$$

$$\begin{aligned}\int_{0}^{1}2x\,dx &= \Big[x^2\Big]_{x=0}^{1}\\ &= (1)-(0)\\ &= 1\end{aligned}$$

2. $\frac{7}{24}$

$$\begin{aligned}\int_{0}^{1-x^2}(1-y-x^2)\,dy &= \Big[y-\frac{1}{2}y^2-x^2y\Big]_{y=0}^{1-x^2}\\ &= \Big[(1-x^2)-\frac{1}{2}(1-x^2)^2-x^2(1-x^2)\Big]-\Big[0-\frac{1}{2}(0)^2-x^2(0)\Big]\\ &= \frac{1}{2}x^4-x^2+\frac{1}{2}\end{aligned}$$

$$\begin{aligned}\int_{0}^{1}(\frac{1}{2}x^4-x^2+\frac{1}{2})\,dx &= \Big[\frac{1}{8}x^5-\frac{1}{3}x^3+\frac{1}{2}x\Big]_{x=0}^{1}\\ &= \Big[-\frac{1}{8}(1)^5-\frac{1}{3}(1)^3+\frac{1}{2}(1)\Big]-\Big[\frac{1}{8}(0)^5-\frac{1}{3}(0)^3+\frac{1}{2}(0)\Big]\\ &= \frac{7}{24}\end{aligned}$$