MTH 142 Practice Problems for Exam 1 Last updated 02/02/04 2pm

Sections 7.0,7.1,7.2,7.3,7.4

Note: This is a selection of sample problems. The actual test will have fewer problems.

Instructions: Calculators cannot be used during the test. Show your work. Your may use integration by substitution, by parts, by trigonometric substitution, by partial fractions, supplemented with algebraic techniques such as completing the squares, polynomial division etc.

(1.) $\displaystyle\int \frac{6t+1}{t^3+2t^2+t}\, dt$ 　　　(2.) $\displaystyle\int \ln(x+1)\, dx$ 　(3.) $\displaystyle\int_0^1 (-3x+2)e^{2x}\, dx$

(4.) $\displaystyle\int_{-\pi/4}^0 \cos x\sqrt{3\sin x+4}\, dx$ 　(5.) $\displaystyle\int_0^1 \frac{x^2}{2x-3}\, dx$ 　　(6.) $\displaystyle\int \frac{x+4}{x^2+8x-9}\, dx$

(7.) $\displaystyle\int \frac{-2}{x^2+x+\frac{26}{4}}\, dx$ 　　　(8.) $\displaystyle\int \frac{e^x}{e^x+2}\, dx$ 　　(9.) $\displaystyle\int_1^3 \frac{t^2}{t^2+9}\, dt$

(10.) $\displaystyle\int \frac{1}{1+\sqrt{x}}\, dx$ 　　　(11.) $\displaystyle\int 4t\sqrt{2t+1}\, dt$ 　(12.) $\displaystyle\int a\sin(bt)\, dt$

(13.) $\displaystyle\int \frac{3x^2}{\sqrt{16-x^2}}\, dx$ 　　　(14.) $\displaystyle\int \sqrt{3-x^2}\, dx$ 　(15.) $\displaystyle\int \frac{-6x+2}{3x^2-2x}\, dx$

(16.) $\displaystyle\int \frac{4}{6x-x^2}\, dx$ 　　　(17.) $\displaystyle\int \frac{t-4}{t^3+8t^2}\, dt$ 　(18.) $\displaystyle\int \frac{3t-2}{t^3+4t}\, dt$

(19.) $\displaystyle\int \frac{(\sqrt{x}+1)^2}{\sqrt{x}}\, dx$ 　　　(20.) $\displaystyle\int \frac{t+t^7}{\sqrt{t}}\, dt$ 　(21.) $\displaystyle\int \frac{5}{x^3-16x}\, dx$

Use the given table of integrals to compute the following.
(Note: for this practice use the table at the end of the textbook)

(22.) $\displaystyle\int_0^{\pi/4} \cos^5(2t)\, dt$ 　　(23.) $\displaystyle\int \frac{\pi^4}{\sin^4(x)}\, dx$ 　　　(24.) $\displaystyle\int_0^{2\pi} \sin^2(m\,x)\, dx$

(25.) $\displaystyle\int t^2 e^{t-1}\, dt$ 　　(26.) $\displaystyle\int (2x+1)^2\sin x\, dx$ 　(27.) $\displaystyle\int x^8\ln(x^5)\, dx$